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THE FOOD, AGRIBUSINESS AND RURAL MARKETS (FARM) PROJECT

Annual Report FY 2013: Volume I—Main Report

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With:

ACDI/VOCA
Action Africa Health International
Risk and Security Management Consulting

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DISCLAIMER
The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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ACRONYMS

AAH-I	Action Africa Health International
AGRA	Alliance for a Green Revolution for Africa
ATF	Agricultural Trade Fair
BCU	Bugisu Cooperative Union
CAMP	Comprehensive Agriculture Management Plan
CES	Central Equatoria State
CMV	Cassava Mosaic Virus
COP	Chief of Party
DAP	Di-ammonium phosphate
DCOP	Deputy Chief of Party
EES	Eastern Equatoria State
FARM	Food, Agribusiness and Rural Markets
FAO	Food and Agriculture Organization
FBO	Farmer-based organization
GAP	Good agronomic practices
GIZ	German Society for International Cooperation
ha	Hectare
IFDC	International Fertilizer Development Center
IGF	Innovative Grants Facility
JICA	Japan International Cooperation Agency
kg	Kilogram
MAFTARFCRD	Ministry of Agriculture, Forestry, Tourism, Animal Resources, Fisheries, Cooperatives and Rural Development
MSME	Micro-, small, or medium enterprise

MT	Metric tons
NBS	National Bureau of Statistics
NEAT	National Effort for Agricultural Transformation
PEW	Payam extension workers
PMP	Performance Monitoring Plan
QPM	Quality protein maize
RAISE Plus	Raising Rural and Agricultural Incomes with a Sustainable Environment Plus
RSM	Risk and Security Management Consulting
RSS	Republic of South Sudan
S4D	Seeds for Development
SIFSIA	Food Security Information for Action
TNA	Training needs assessment
ToT	Training of trainers
USAID	United States Agency for International Development
USG	United States Government
WFP	World Food Programme
WES	Western Equatoria State
ZEAT	Zonal Effort for Agricultural Transformation

EXECUTIVE SUMMARY

The Food, Agribusiness and Rural Markets (FARM) Project's third full year built upon the previously established solid foundation for operational and technical activities. The project was launched by the United States Agency for International Development (USAID) Administrator, Rajiv Shah, in May 2010 and has enjoyed a high level of visibility since then within USAID, the Government of the Republic of South Sudan (RSS), and partner and donor organizations. The FARM Project has established a lasting partnership with government counterparts and has created an operational environment conducive to economic growth in the agricultural sector. FARM has not only been implementing the program approved at the beginning of FY 2013, but has also been supporting the National Effort for Agricultural Transformation (NEAT), which identified initiatives to scale up agriculture in the Greenbelt agro-ecological zone.

The year's notable accomplishments include the following:

- FARM distributed 332 metric tons (MT) of seed and cassava stalks to farmers in the three target states. This quantity of seed and cassava stems is similar to last year's. Because of the higher seeding rate of the crops distributed in FY 2013, however, the area planted—10,169 feddans (4,270 hectares)—is 27 percent less than last year's area. The project distributed 50 MT of certified maize seed; 100 MT of groundnut seed; 133 MT of locally grown cassava stems; 46 MT of beans; and small quantities of millet (697 kilograms [kg]), rice (1,125 kg), and sesame (460 kg).

- FARM undertook two yield assessments for the Longe 5 maize crop, showing a further yield increase to 1,032 kg/feddan, a three-fold increase over the baseline figure of 336 kg/feddan. The rainfall distribution in the second season of 2012 was excellent, and it is quite possible that these results will not be able to be replicated in future seasons.

- Under the FARM Project's Innovative Grants Facility (IGF), 739 feddans were plowed using tractors or ox-plows. Farmers paid a service provider 20 percent of the cost of plowing and harrowing.

- Five blocks of contiguous land, each covering an area of 100 feddans, were opened up in Eastern Equatoria State as part of the NEAT initiative. Each site followed environmental guidelines developed by Abt, approved by USAID, and coordinated with local farming communities.

- The project initiated contract growing with 157 farmers, cultivating certified maize, groundnuts, and beans for sale to a private seed company in Yei. Seventy feddans of seed were grown through this program in 2013.

- FARM collected rainfall data from all 27 payams as well as from Juba town. There was a severe drought in May in Eastern Equatoria State and outside of the Greenbelt, but good rains occurred in the Greenbelt area west of the River Nile.

- The project took a significant role in the Second National Agricultural Trade Fair, held in Juba in November 2012. FARM also supported training for state ministry staff in Yambio and Torit.

- The project distributed smartphones as a pilot in Central Equatoria State. Using these smartphones, payam extension agents were able to collect information from over 300 farmers

on surplus production they had available for sale. The farmers indicated that they had a surplus available to sell of 95.6 metric tons and that they had sold 67.8 metric tons.

- The project increased the number of farmer-based organizations (FBOs) by 187 and the number of project-supported farmers by 4,135.

- Six cooperative unions were identified. They received training on how to manage a union during the year. The cooperative unions were also supported with post-harvest equipment to ease the burden of shelling maize and groundnuts, threshing sorghum, and grating and chipping cassava.

- The project explored the possibility of initiating production of groundnut oil. Prior to the war, groundnut oil was produced locally, but this production has not been restarted since the cessation of fighting.

- The project conducted a maize mill survey in Yei, Morobo, and Kajokeji Counties. Almost all the mills are hammer mills and are used on a largely subsistence basis for the catchment of people in and around the mill.

- Farmer training was an integral part of FARM's program of work. Over 5,000 farmers received training during the year.

- The project provided practical training on ox-plowing, use of the two-wheeled tractor, and maintenance of post-harvest agricultural equipment.

- FARM initiated a training needs assessment for staff, to identify ways to support payam extension workers (PEWs) by improving their skills.

- Members of cooperative unions were taken to Mbale, Uganda, to visit a cooperative and learn how it functions.

- The project made progress on seven policies early in the year. Three policies on food security, marketing, and rural finance still require stakeholder meetings to be convened.

- FARM continued with the grants program for seeds and plowing and expanded the program for block farms and development of cooperative unions.

- A gender assessment was initiated during the last month of the reporting period.

- FARM began collecting price data from all the payams where it operates.

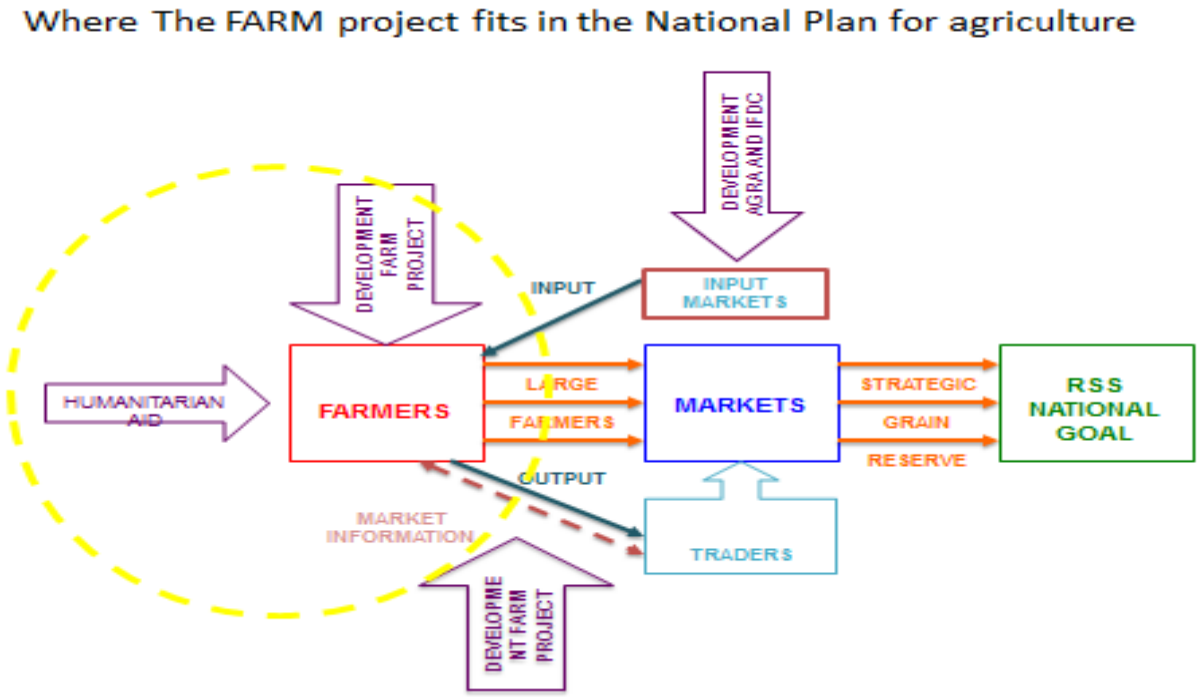
1. INTRODUCTION

USAID's FARM Project is an integral part of the United States Government's Greenbelt Initiative program in South Sudan. FARM is funded through the Raising Rural and Agricultural Incomes with a Sustainable Environment Plus (RAISE Plus) Indefinite Quantity Contract. The FARM Project contributes to the Republic of South Sudan's goals of achieving food self-sufficiency, reducing poverty, and promoting economic growth through pursuit of its own overall assistance objective: to "increase food production in targeted areas of South Sudan."

The FARM Approach

The vision for the FARM Project is to promote sustained increases in food production in the Greenbelt area of the Equatoria states. To do this, the project is establishing the foundation for a viable and profitable commercial agricultural sector that enhances food security and community resilience, while improving livelihoods and providing new business opportunities in South Sudan. One of the project's contributions to the development discussion in South Sudan has been to build consensus on the need to begin transitioning from a relief model to a market-driven approach for agricultural development. This approach is reflected in FARM's five-year strategy of sustainable development of the commercial agriculture sector in the three states of the country where it operates: Central Equatoria State (CES), Eastern Equatoria State (EES), and Western Equatoria State (WES).

Figure 1: Project's Role in National Plan



During the reporting period, the project has supported two initiatives by the Ministry of Agriculture, Forestry, Tourism, Animal Resources, Fisheries, Cooperatives and Rural Development (MAFTARFCRD). The first was the development of the Comprehensive Agriculture Management Plan (CAMP), which is being implemented with funding from the Japan International Cooperation Agency (JICA). This ongoing three-year program (2012 to 2014), is attempting to identify the best development strategies for each state of the country. FARM has been working with the CAMP team in each of its three target states.

The project has also been involved in NEAT, which is prioritizing activities in each agro-ecological zone of South Sudan to rapidly scale up production of different commodities. NEAT's aim is to fulfill the President's ambition for the country to become food secure by 2014. As the counterpart of MAFTARFCRD, FARM has been a principal implementer of the Zonal Effort for Agricultural Transformation (ZEAT) in the Greenbelt agro-ecological zone.

Objectives and Expected Results

Over its five-year duration, the FARM Project will increase agricultural productivity in selected commodities—currently maize, sorghum, cassava, and groundnuts, with some discrete initiatives to work on higher-value food crops such as beans, sesame, upland rice, and finger millet. This will increase agricultural trade and improve the capacity of producers and private and public sector actors to develop commercial smallholder agriculture. The FARM Project will foster economic growth to reduce poverty and food insecurity by improving the efficiencies of staple food value chains. The project also aims to help subsistence farmers evolve into smallholder producers able to generate money from their farming enterprises.

As USAID's most comprehensive agricultural program in South Sudan, FARM continues to provide technical assistance and capacity building support to MAFTARFCRD as well as to the state-level ministries of agriculture in Central, Eastern, and Western Equatoria.

1.1. PROGRAM OUTCOMES

In support of the overall program objective to increase production of targeted agricultural commodities in the project's targeted areas, major program outcomes include the following.

1.1.1. Agricultural Productivity

- Increased areas under cultivation within the three target Greenbelt states
- Higher yields per unit of land from which surpluses can be marketed
- Increased numbers of agricultural service providers (e.g., seed and fertilizer suppliers)
- Expansion of financial institutions into the agricultural sector with production loans

1.1.2. Agricultural Trade

- Increased volumes of smallholder products sold in markets
- Market-based decisions by farmers that result in a net profit
- Producers consistently meeting market standards for timing, quality, and quantity of product

- Increased volume of value-added/processed products from local agricultural production
- Increased willingness of financial institutions to provide loans through the entire value chain process

1.1.3. Capacity Building

A. Private Sector Capacity

- Emerging small, and medium producer organizations able to plan and adapt production to market demand
- Selected value chains more vertically integrated, with enhanced business relationships
- Increased investment in commercial agriculture along entire value chains

B. Public Sector Capacity

- RSS providing reliable, quality services that are key for agricultural growth (e.g., plant and pest inspection)
- State governments developing sound strategies and plans that support market-led agriculture
- Improvement in MAFTARFCRD management capabilities at state and county levels

C. Enabling Environment

- Taxation and trade policies not inhibiting trade; free movement of agricultural goods within South Sudan
- Public services not competing with private sector or distorting market incentives for provision of goods and services
- Agriculture and food security policies and regulations helping foster growth of agricultural sector in South Sudan

1.2. ACTIVITIES COVERED IN THIS REPORT

This report covers project activities between October 1, 2012, and September 30, 2013. In Chapter 2, the report addresses critical changes in project leadership and management and the scope of operations. In Chapters 3 through 5, the project's technical activities are outlined under the three themes of Production and Productivity, Marketing, and Capacity Building. Chapter 6 addresses activities under cross-cutting themes during the reporting period.

Appendix D contains success stories about FARM activities, and Appendix E contains weekly project reports.

2. PROJECT MANAGEMENT AND SCOPE

Shifts in project technical and geographic scope. The project continued to work in the same 27 target payams. There was a significant increase in efforts to coordinate FBOs and assess their capacity to develop into cooperatives. During the first half of the reporting period, FBOs in Magwi, Yei, Morobo, Kajokeji, Mundri, and Maridi counties were assessed and efforts were made to establish six cooperative unions. With the consolidation of improvements in production and productivity, the emphasis has been shifted to development of the marketing sector, notably:

- The establishment of cooperative unions
- The promotion of value addition in the four primary crops targeted by the project during the reporting period
- The collection of data to reliably show where marketable surpluses can be found and where farmer-trader linkages need to be built up (including the use of smartphones to collect data on surpluses available from farmers and ways to feed those surpluses into the marketplace)

2.1. MID-TERM EVALUATION

Social Impact, a third-party evaluator, conducted a mid-term evaluation of the FARM Project. The evaluation produced its findings early in the reporting period. FARM has addressed these findings during FY 2013 as follows:

- *Storage and aggregation.* The project continues to communicate with the World Food Programme (WFP), but the scope of the program being promoted by WFP is different from the scope of the FARM Project. Although the cooperative unions do have storage space, their main purpose is to sell the commodity rather than store it.
- *Transportation and infrastructure.* The project needs to coordinate or share information with other donor projects working on roads. The project continues to strive for improved roads for marketing farmers' produce. FARM also recognizes, however, that even with improved roads, market distortions from and the influence of Ugandan trade are major impediments to good market development.
- *Marketing information.* With the smartphone pilots, there is need to coordinate with other donors, especially the Food and Agriculture Organization (FAO) and the Ministry of Planning, so that the data from smartphones is available to all agencies working in the project area. FARM is working with farmers and traders to ensure that information is shared and available between the two groups.
- *Scaling up project reach by focusing on "umbrella cooperatives."* Cooperative unions should be promoted. Organizational capacity assessments and capacity building have been a priority in FY 2013; six unions are being prepared to serve as marketing arms for their farming communities.

- *Linkages between unions and other programs to promote sustainability*. This will be implemented as the unions develop their programs.

- *More work with traders on market understanding and marketing opportunities.* The project is working with traders; this recommendation is an integral part of the FY 2014 program.

- *Development Credit Authority.* The project should meet with banks to facilitate linkages between project beneficiaries and financing sources. Initial discussions have been held with Equity Bank. Discussions with other banks will continue.

Project activities to enhance the quantity and quality of FARM's engagement with FBOs are described below:

- *Quantity of extension agents.* There was a recommendation for FARM to use resources more efficiently and hire more payam-level extension agents. The project did not pursue this recommendation since there was pressure from the ministry to employ seconded extension staff (although this failed to materialize). This has particularly been the case with the block farms in Eastern Equatoria.

- *Cooperative unions.* The focus on cooperative unions is good, and FARM is working to guarantee their sustainability after the end of the project.

- *Practical skills-building among farmer-based organizations*. Skills-building needs to focus not only on best agronomic practices but also on topics such as bookkeeping. The project has spent significant amounts of time addressing bookkeeping and record-keeping, particularly in connection with the formation of the cooperative unions.

- *Positioning local organizations, such as Action Africa Health International, to carry on work*. The project has tried to work with local organizations as service providers, assessment organizations, or training organizations. The results have been mixed, largely due to organizations taking too long to mobilize with competent staff and to their own ability to achieve implementation time targets set by the project.

- *Consideration for expanding geographic coverage of project.* The ministry asked that we consolidate in the geographic areas in which the project work, although as part of ZEAT, FARM management was asked to expand cooperative activities into Mundri East, Ibba, Nzara, Ezo, and Tambura counties in WES.

The project's responses to process recommendations are summarized below.

- *Recommendation: Correct weaknesses in assessment of yields*. This has been discussed with the team and improvements have been incorporated

- *Recommendation: Revise Project Management Plan (PMP) to incorporate meaningful and feasible indicators.* A list of potential indicators has been included in the FY 2014 work planand the PMP will be revised in early 2014.

- *Recommendation: Enhance capacity to monitor activities (for example, closer monitoring of best agronomic practices in field).* The project has increased the number of staff working on project monitoring. Field-level data collection capacity is being enhanced through the use of technology such as smartphones.

- *Recommendation: Provide more training to field-level staff.* The training needs assessment has been completed and a training program is planned for January 2014.

- *Recommendation: Fill state-level coordination positions*. These were filled and have been in effect since May 2013.

- *Recommendation: Improve program workloads of extension agents.* This still requires more work. In the mid-term evaluation, some PEWs handled more than 20 FBOs while others had less than five. In selecting new FBOs for 2013, more were identified in payams that previously had fewer FBOs.

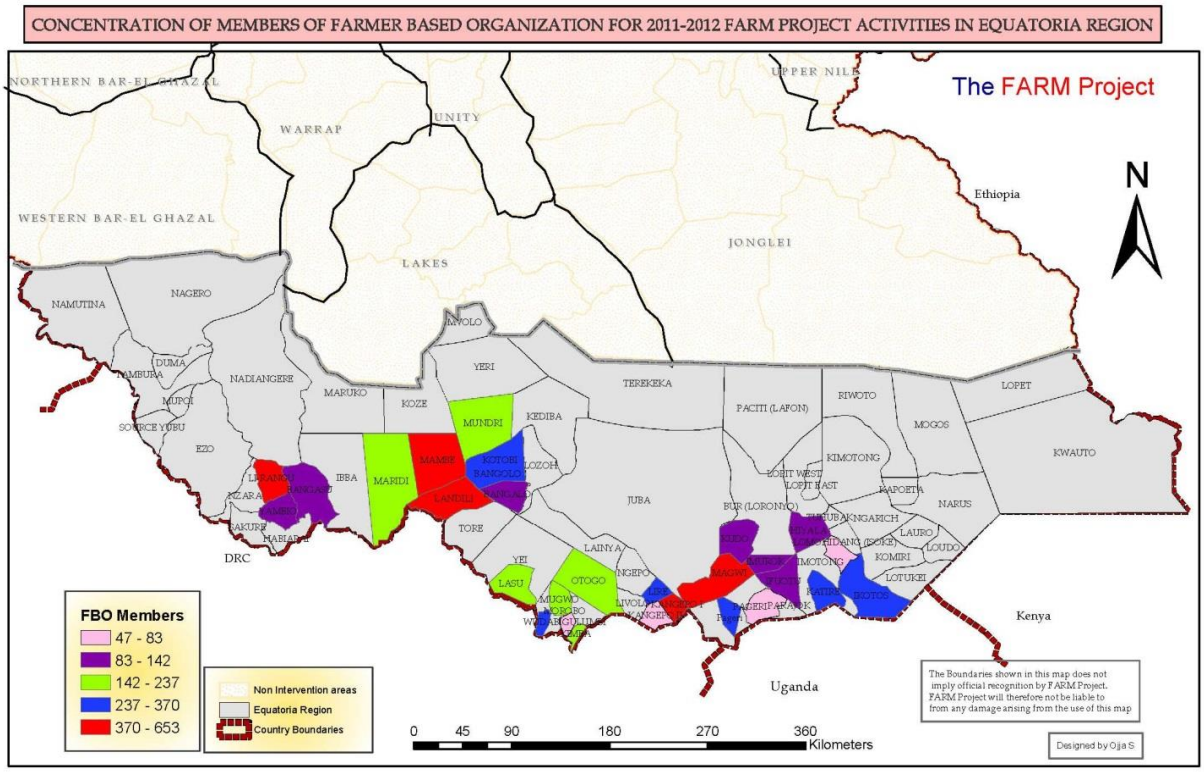
- *Recommendation: Address gender issues—at minimum, conduct gender analysis.* A gender analysis, initiated during the reporting period, was completed in October 2013.

- *Recommendation: Provide capacity building to RSS officials and institutions.* Efforts in this area are ongoing, and have included participation in activities such as the cooperative visit to Mbale and involvement in farming as a business training. In addition, the project provided hardware for solar panels and computers for county agriculture department offices as the first stage in getting them internet linked.

2.2. CONTINUED CONSOLIDATION IN THE 27 TARGET PAYAMS

There was no change in the target payams for project activities. Figure 2 below shows the spatial location of the 27 payams where the project operates.

Figure 2: Project Service Area (By Payam)



2.3. PRIORITIZATION OF COUNTIES WITH ACCESS TO MARKETS

The development of the Juba–Nimule road has opened up access to Magwi County. However, surplus production is also found in other counties, particularly Yei and Morobo Counties. Through the cooperative unions, the project is working to develop systems that will allow these surpluses to be marketed. FARM will assess the feasibility of adding new counties with good market access to the area of operations in FY 2014.

2.4. SUPPORT FOR EXPANSION OF ALTERNATIVE LAND-CLEARING AND LAND-PREPARATION STRATEGIES

Currently, almost all cultivation in the project area uses traditional hand tools, limiting the scope for expansion of agriculture. FARM is working to increase the quantity of land cultivated using ox-plows or tractor plows. In FY 2013, local service providers who had tractors and plows were solicited to negotiate agreements with FBOs to plow land for planting improved varieties of food crops. Thirty-four service providers were identified, including 20 who had tractors and 14 who possessed oxen. The project reached 739 feddans of land, compared to a target of 913. This was due to a combination of limited de-stumped land, a dearth of tractors in good operating condition, and frequent breakdown of tractors. The total included 95 feddans of land that were used for seed multiplication activities. The requirement for farmers having their land cleared to contribute 20 percent of the cost of the plowing did not appear to be a major impediment to getting land plowed, except in Torit County, where farmers refused to make the payments. The project supplemented the service providers with 12 two-wheeled tractors distributed in May 2012 to trained FBO groups. In 2013, trainers from the company that supplied the two-wheeled tractors returned to retrain the farmers of the FBOs that had received the tractors. Despite significant efforts in servicing the machines and ensuring that farmers knew how to maintain them, this technology does not appear appropriate for FARM beneficiaries at this time. The FARM Project continues to work with farmers who have oxen that they wish to use for animal traction and conducted a training for farmers with oxen in Kajokeji County in September 2013.

2.5. EFFORTS TO INCREASE MARKET ACCESS

The project recognizes that one of the main drivers for development of the agricultural sector in South Sudan must be the ability of farmers to sell their surplus production in the marketplace. Almost all of the sales of produce from the smallholder farmers with which the project works take place at marketplaces; there are very limited sales at the farm gate. Given that farmers do not often have access to transport, sales tend to be small, further limiting a rapid expansion in market development. The project, through the smartphone information program, is now linking farmers who have surpluses with traders so that more sales can take place at the farm site.

Another major challenge is that farmers do not readily understand markets. There are costs incurred in aggregation, particularly when the individual surplus holdings tend to be small. Training farmers to work out costs of production is ongoing, but productivity improvements need to be reflected in increased competitiveness through lower unit prices. This work continues, with the understanding that behavior change is always a slow process.

3. COMPONENT 1: PRODUCTION AND PRODUCTIVITY

3.1. INTRODUCTION

The FARM Project aims to increase farm-level production and the productivity of smallholder farmers through expansion of the area of land under cultivation and increased adoption of improved technologies and management practices. Specifically, the project aims to increase yields through the provision of high-quality seeds and planting material, with corresponding training in agronomic best practices, as well as through the expansion of land under cultivation through the introduction of mechanization.

3.2. SEEDS AND SEED MULTIPLICATION OVERVIEW

As in many other countries, the importance of using good-quality seeds is becoming more recognized in South Sudan. Since project start-up in 2010, the FARM Project has been implementing activities to promote the use of improved seeds by smallholder farmers. This activity has increased in significance every year for the last three years. The FARM Project considers the use of good-quality seeds to be one factor necessary for the improvement of productivity in agriculture, since improved planting material has a direct impact on increasing yields and raising food security levels. Project activities to distribute certified improved seeds and facilitate seed multiplication activities for smallholders (with involvement from the local private sector seed industry) have contributed to productivity improvements, technology dissemination, and farmer adoption.

Each year from FY 2011 through FY 2013, the FARM Project implemented seed distribution activities as one way to deliver on Intermediate Result 1.1: Increased Adoption of Improved Technologies, as measured through the indicator: Number of farmers, processors, and others who have adopted new technologies or management practices as a result of USG assistance.[1] The justification for these distributions is that they help smallholder farmers gain access to and adopt new technologies (in the form of good-quality certified seeds) that are currently not readily available on the market in South Sudan. FARM recognizes that crop status and the response of other inputs in crop production largely depend on the seeds that were sowed. There has been an emphasis on expanding areas of land under production. The aim is to allow farmers to cultivate a larger area and hence be more economically productive through this larger productive area and an increase in productivity. One of the ways of attaining this increase is through the use of the best planting material. Seed distributions have been an entry point of intervention for the new FBOs that have been identified each year. The FARM Project estimates that the use of good-quality seeds of improved varieties can contribute to an increase in yield

[1] The Food, Agribusiness and Rural Markets Project. "FARM Program Performance Management Plan." Abt Associates, Bethesda, MD, p. 10.

of about 20 to 25 percent. However, yield gains of up to 300 percent for maize have been achieved by some smallholder farmers participating in FARM Project. This is not an unrealistic result, especially when good agronomic practices (GAP) have been followed and the rainfall has been good.[2]

The FARM Project has taken advantage of the presence of modern plant breeding methods and biotechnological advances in the seed industry in the East Africa region. For example, Longe 5 maize seed has shown good potential to replace the low-yielding varieties farmers used during and after the 22-year civil war. Apart from its high-yielding attributes, Longe 5 is also a quality protein maize (QPM), with the potential to improve nutrition. QPM produces 70 to 100 percent more lysine and tryptophan than the most modern varieties of tropical maize.[3] These two amino acids allow the body to manufacture complete proteins, thereby eliminating the condition known as wet-malnutrition. In addition, it has also been scientifically proven that tryptophan can be converted in the body to niacin, which theoretically reduces the incidence of pellagra.

Other attributes that were considered when selecting new varieties included genetic purity, i.e., the true-to-type nature of the seeds being distributed, and the potential for high returns per unit area. The crop's genetic potential can be fully exploited by following GAP, increasing tolerance to pests and diseases, and reducing the seedling rate by recommending one seed per hole to promote fast and uniform emergence of vigorous seedlings. The FARM Project has conducted yield assessments; maize has been used as a proxy measure. Many farmers have adopted the new varieties in their cropping systems.

During the period under review, the FARM Project conducted successful seed distribution and seed multiplication activities as laid out in the activity plan for 2012/2013. There have been slight departures in achievement for both seed distribution and multiplication. Cassava was not distributed in Mundri West in WES as planned because the vendor was unable to procure sufficient produce in time for the distribution. In addition, the seed multiplication program was only implemented in CES, because no private sector seed companies in EES and WES were identified. Systems should be put in place urgently to facilitate the establishment of private seed companies in these states to help the program develop. The sections below contain specific details on seed distribution beneficiaries and on the implementation of seed distribution and seed multiplication activities.

3.2.1. Seed Distribution Beneficiaries

In FY 2013, a total of 332 MT of various seeds were distributed to selected beneficiaries across the project area through an innovative in-kind grants scheme. Through this grants program, the project distributed improved planting materials for seven different crops, as outlined below:

1. ***Maize.*** Longe 5 (50 MT) was distributed to 288 FBOs with 6,606 farmer members, who are expected to plant it on 5,004 feddans.

2. ***Groundnuts.*** Serenut 2 (about 40 MT) was distributed in WES, Red Beauty (about 40 MT) was distributed in CES, and Igola (20 MT) was distributed in EES, for a total of 100 MT, which was distributed to 247 FBOs with 5,683 farmer members, who are expected to plant it on 2,504 feddans.

[2] Yield Assessment Data, FARM Project 2012.

[3] Vasal S. and Villegas E., 1990.

3. ***Cassava.*** TME 14 (122 MT) was distributed in all states and NASE 14 (11 MT) was distributed to some FBOs in CES only, for a total of 133 MT, which was given to 102 FBOs with 3,318 farmer members, who are expected to plant it on 665 feddans.

4. ***Beans.*** K132 (30 MT) was distributed in CES and NABE 4 (16 MT) was distributed in CES, EES and WES, for a total of 46 MT, which was distributed to 152 FBOs with 3,487 farmer members, who are expected to plant it on 1,150 feddans.

5. ***Millet, rice, sesame.*** These three new crops have been introduced in the seed distribution program. Millet was distributed to 65 FBOs with 1,681 farmer members, who are expected to plant it on 348 feddans, mainly in the drier areas of EES. Rice was distributed to 11 FBOs with 203 farmer members, who are expected to plant it on 38 feddans in the wetter areas of CES and WES. Sesame was distributed to 40 FBOs with 849 farmer members, who are expected to plant it on 230 feddans, mainly in the Madi corridor in Magwi County of EES. These three crops were selected to replace the sorghum that is no longer being distributed through the project because of low farmer demand for the available varieties. These three crops are considered to be of higher value than sorghum.

The seed rates used were specific to each crop. Table 2 below summarizes the quantities distributed in each state.

Table 1: Seed Rate and Summary of FY 2013 Distribution by Type and State (in kg)

	Maize	Groundnuts	Cassava	Beans	Millet	Rice	Sesame	Total (kg)
Seed rate (kg/feddan)	**10**	**40**	**200**	**40**	**2**	**30**	**2**	**-**
Eastern Equatoria State	12,980	20,000	33,300	10,570	697	-	460	78,007
Central Equatoria State	23,935	41,760	69,200	34,790	-	405	-	170,090
Western Equatoria State	13,085	38,240	30,600	640	-	720	-	83,285
Total	**50,000**	**100,000**	**133,100**	**46,000**	**697**	**1,125**	**460**	**331,382**

3.2.2. Expected Areas of Production

The Greenbelt has a bimodal rainfall pattern with two cultivation seasons each year: one from March to July and the other from August to December. There are traditional crops grown in each season. Maize, groundnuts and long-season sorghum dominate cultivation in the first season cultivation, and short-season sorghum, maize, and sesame dominate the second cropping season. Cassava is planted through cuttings in the middle of the year to ensure sufficient growth for the young plants to survive the very hot dry season. The project conducts yield assessments of first- and second-season maize in August/September and December/January of each year.

One of the project indicators for the FARM Project is Hectares under Improved Technologies or Management Practices as a Result of USG Assistance. The FARM Project seed distribution program of FY 2013 supplied improved planting material for an estimated total of 10,169 feddans to be planted by

FBO members. Having distributed Longe 5 to 6,606 farmers, the average land planted per farmer should be 0.76 of a feddan. A total of 2,504 feddans is expected to be planted with groundnuts by 5,683 farmers, for an average plot per farmer of 0.44 feddans. About 3,318 smallholder recipients of cassava cuttings, 1,681 recipients of millet seed, and 203 recipients of rice seed will grow the crops on plots measuring an average of about 0.2 feddans per farmer. Seed beneficiaries for beans and sesame should grow the crops on average plots sizes of 0.33 and 0.27 feddans per famer, respectively. However, this comparison excludes previous years' seed distributions, which—if included in the calculations—might well result in higher averages for each crop per farmer. FARM production staff hope that previous years' seed beneficiaries continue to use farm-saved seeds, as the varieties distributed are self-pollinating and farmers can recycle the seeds up to three times before the yield potential starts to drop. For this reason, the cumulative areas planted with improved seeds are expected of be higher than those reported in the FY 2013 summary tables.

Table 2: Expected Area (Feddans) for FY 2013 and Average Size per Farmer for Each Crop

State	Maize	Ground -nuts	Cassava	Beans	Millet	Rice	Sesame	Total Feddans
Eastern Equatoria State	1,298	504	166	264	348.5	-	230	2,810.5
Central Equatoria State	2,398	1,044	346	870	-	13.5	-	4,671.5
Western Equatoria State	1,308	956	153	16	-	24.0	-	2,457.0
Total	**5,004**	**2,504**	**665**	**1,150**	**348.5**	**37.5**	**230**	**9.939.0**
Average field	0.76	0.44	0.20	0.33	0.21	0.18	0.27	

3.2.3. Expected Volume of Production

The maize assessment findings from FY 2012 show an average of 1,100 kg per feddan for farmers who received and used the distributed Longe 5 maize seeds.[4] FARM production staff expect that with a total area of 5,004 feddans, about 5,500 MT of maize will be produced across the Greenbelt area where FARM operates. Cassava fresh root production is predicted to total about 9,975 MT, i.e., a yield of 15,000 kg per feddan for the modern variety TME 14 that was distributed. Other seeds distributed included groundnuts, which are expected to produce a total of 1,000 MT at the reserved yield level of 400 kg per feddan; 345 MT of beans, with a yield level of 300 kg per feddan; 73 MT of millet, with a yield level of 210 kg per feddan; and 73 MT of sesame at an estimated yield of 320 kg per feddan. Theoretically this means that out of the 332 MT of seed that was distributed, about 16,984 MT of commodity will be realized. This indicates that for every 1 kg of seed distributed, 51 kg of commodity are expected to be harvested. Table 4 below summarizes production expectations for each crop.

[4] The Food, Agribusiness and Rural Markets Project. "2012 First Season Maize Yield Assessment Report." Abt Associates Inc., Bethesda, MD.

Table 3: Expected Production for FY 2013 for Each Crop and State (MT)

State	Maize	Ground-nuts	Cassava	Beans	Millet	Rice	Sesame	Total
Eastern Equatoria State	1,427	201	2,490	79	73	-	73	4,343
Central Equatoria State	2,636	417	5,190	261	-	4	-	8,508
Western Equatoria State	1,438	382	2,295	5	-	7		4,127
TOTAL	**5,501**	**1,000**	**9,975**	**345**	**73**	**11**	**73**	**16,978**

Source: FARM Project, 2013 seed distribution.

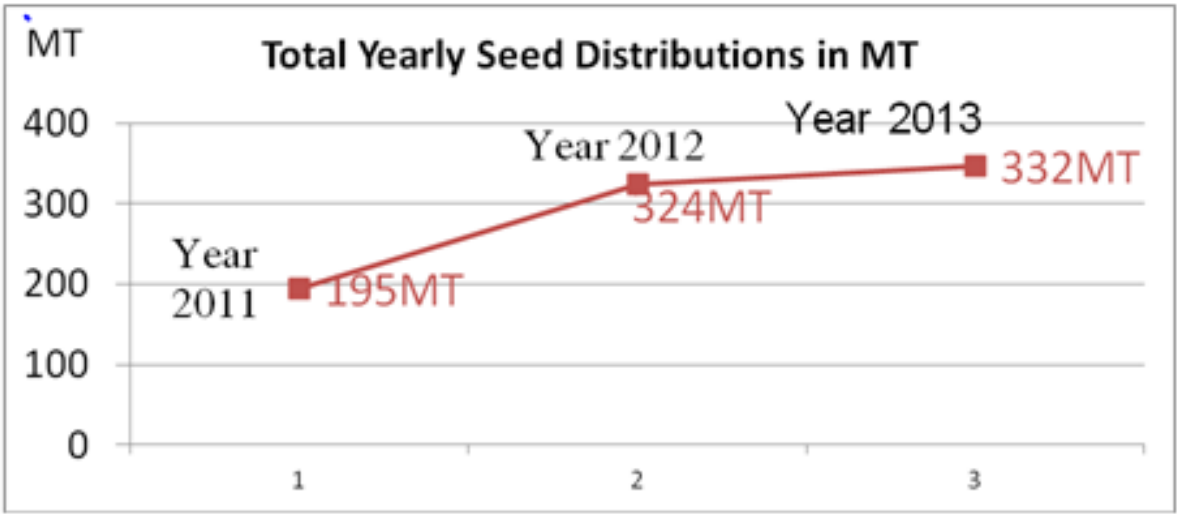
3.2.4. Progress on Annual Seed Distribution

The project has experienced a progression in total distributions conducted each year. In FY 2011, 195 MT of seed was distributed. This increased to 323 MT seeds in FY 2012 and 331 MT of seeds in FY 2013. Table 5 below presents the progress of distributions over the past three years and the suggested targets for FY 2014. In all years, the project attempted to conduct the distribution through a carefully selective process that was based on demand for seed by the beneficiaries and the suitability of the varieties being promoted by the project to the climatic conditions prevailing in the Greenbelt region in the three states. To mitigate against high precipitation, rice was included. Table 5 shows that beans were introduced in FY 2012; and millet, rice, and sesame were introduced in the FY 2013 distributions. The quantity of maize being procured in 2014 is lower in total (50 MT in FY 2013 compared to a planned 40 MT in FY 2014) but the quantity per new FBO is being increased, since there were 187 FBOs identified in 2013 and only 75 in 2014. Cassava will be dropped in FY 2014 due to high logistical demands; it is too bulky and the risk of systemic disease transmission is high as cuttings move from place to place. This change will result in a significant decrease in the weight of seed to be procured and distributed in FY 2014.

Table 4: Annual Seed Distribution Summaries by Crop, including Targets for FY 2014 (kg)

Crop Type	Year				Cumulative Totals from FY 2011 to FY 2013 (Excluding FY 2014)
	FY 2011	FY 2012	FY 2013	FY 2014 Plan	
Maize (kg)	60,000	64,695	50,000	40,000	174,695
Sorghum (kg)	10,000	7,620	-	-	17,620
Cassava (kg)	100,000	141,615	133,100	-	374,715
Beans (kg)	-	10,185	46,000	45,000	56,185
Groundnuts (kg)	25,000	98,880	100,000	100,000	223,880
Other (Millet, Rice, Sesame) (kg)	-	-	2,282	10,000	2,282
All Crops (kg)	**195,000**	**322,995**	**331,382**	**195,000**	**849,377**
Total Annual Feddanage	10,850	13,715	10,169	11,225	34,734

Figure 3: Total Yearly Distributions in MT



3.2.5. Farmer Selection

The FARM Project selected FBOs as partners with the belief that this strategy would build relationships and communication among farmers and would create linkages between different farmer groups. The hope was that this would result in stronger cooperatives and would lead to the establishment of marketing plans that would improve sales of individual households' surpluses. FARM also provided logistical support through FBOs, which transported seeds for smallholders, thus reducing individual transportation costs. The project's technical support strategy of relying on FBOs is consistent with the government's policy of supporting the smallholder subsector to thrive while emphasizing a collective approach.

In FY 2013, the FARM Project worked with a total of 497 registered FBOs, with a membership of 10,830 farmers. The aim was to satisfy the targets of the FARM project IRs (1.3: Improve Producer Organization Business and Management Skills) as measured by two indicators: Number of producers' organizations, water users associations, trade and business associations, and community-based organizations receiving USG assistance (FBOs), and Number of women's organizations/associations assisted as a result of USG-supported interventions.

During the year under review, seed was distributed to 288 selected FBOs, out of the total of 497 project partner FBOs. Of these, 166 were new FBOs and 122 were selected from the previous list because they had not received seed of that particular crop in the previous distribution. All the newly targeted FBOs were given seeds for crops suitable for their areas, and the seed distribution program was used as a point of intervention to expand on new land and inject new germplasm and improved varieties in farmers' cropping systems. Based on demand from farmers, the selected 122 old FBOs needed to introduce new crops in their production systems; specific crop types were distributed depending on farmer preferences.

Table 6 summarizes the extent of outreach of the distribution by state in 2013, showing the number of FBOs and farmers that benefited from the program. Out of the 10,830 farmers registered with the project as part of 497 FBOs, 6,606 (61 percent of all project-supported farmers) from 288 FBOs received improved maize seeds. A total of 5,683 (52 percent) from 247 FBOs received improved varieties of groundnuts; 3,318 (31 percent) from 102 FBOs received improved cassava cuttings; while 3,487 farmers (32 percent) from 152 FBOs received improved varieties of bean seeds. Millet and sesame

seeds were distributed only in EES. Millet seeds were given to 1,681 farmers from 65 FBOs and sesame seeds to 849 farmers from 40 FBOs. Rice was distributed to 203 farmers from 11 FBOs (four FBOs in CES and seven FBOs in WES) in areas where there is greater potential for upland rice crop production due to high precipitation. In some cases, a farmer would receive improved seeds and varieties for more than one type of crop, up to a maximum of three. These decisions depended on labor availability, market readiness, or farmer identification of varietal traits that suited their particular preferences, environments, and resource levels.

The actual selection of who was to benefit from the seed grants was not easy. There was high demand and a wide range of interests and needs among participating FBOs and farmers. However, the aim of diversifying beneficiaries' crop portfolios is to ensure that farmers are not dependent on a single crop to generate income. When farmers only cultivate one type of crop, they are exposed to high risks from climate change or other factors that could severely impact crop production, such as the emergence of pests or the sudden onset of dry spell or drought. Therefore, introducing a greater range of crop types to farmers through the FARM Project's seed distribution program increases resilience by 1) diversifying crop production, which can increase natural biodiversity; 2) strengthening the ability of the agro-ecosystem to respond to stresses; 3) reducing the risk of total crop failure; and 4) providing producers with alternative means of generating income.

Table 5: Summary of FY 2013 Seed Recipients for Various Seeds Distributed in Each State

State	Beneficiary	All in State	Received Maize	Received Groundnuts	Received Cassava	Received Beans	Received Millet	Received Rice	Received Sesame
Eastern Equatoria State	FBOs	166	86	62	30	52	65	-	40
	Farmers	3,939	2,046	1,550	700	1,153	1,681	-	849
Central Equatoria State	FBOs	156	134	117	31	92	-	4	-
	Farmers	3,537	3,253	2,815	1,829	2,172	-	90	-
Western Equatoria State	FBOs	175	68	68	41	8	-	7	-
	Farmers	3,354	1,307	1,318	789	162	-	113	-
FARM	FBOs	497	288	247	102	152	65	11	40
	Farmers	10,830	6,606	5,683	3,318	3,487	1,681	203	849

3.2.6. Progress on Commercial Seed Multiplication

Through three years of close contact with rural smallholder farmers, and using the field extension workers, the FARM Project became knowledgeable about farmers' lack of seeds to plant, which is the result of a number of factors, including poor production and poor storage. Having noted that there are a good number of farmers who want to try new varieties but are faced with shortage of seed at planting, and that some farmers want to expand land for production but lack readily available, good-quality seeds to plant, the FARM Project is using several options, including seed multiplication, to make seed available to farmers.

During the period under review, the FARM Project implemented, on a pilot basis, a seed multiplication initiative with farmer cooperatives. This income-generating activity is being piloted in CES with Century Seeds Company. FARM is facilitating collaboration by the private dealer, the government, and farmers in order to establish a functional and coordinated seed production and certification process. Specific tasks include farmer identification and mobilization, assistance with plowing, seed grants to beneficiaries, technical training, and coordination of field supervision. The activity is conducted in partnership with Century Seeds Company, a private firm, and MAFTARFCRD. Century Seed supplied basic foundation seeds and other inputs and made contractual arrangements with farmers. It also conducted seed inspections and yield assessments. The seed company is buying the seed crop from farmers for cleaning, sorting, bulking, treating, and packaging so that the seed is ready to be channeled into a distribution network of certified agro-dealers. The farmers' contributions include land; 20 percent cost-sharing on plowing grants; labor for clearing, weeding, harvesting, and initial drying of the seed crop before collection by the company; and transport to processing and warehousing facilities.

FARM is facilitating this public-private partnership to ensure that South Sudan establishes an effective, sustainable, and regulated system for the production and distribution of locally produced, certified seeds for maize, groundnuts, and beans. This initiative is consistent with the government's policy objective of improving smallholder and commercial farmers' access to locally produced, high-quality improved seeds and planting materials at affordable prices. The government (MAFTARFCRD) is providing policy direction on seed systems, inspection, certification, germination, variety purity tests, and issuance of seed and phytosanitary certificates where necessary.

The idea to start a seed multiplication activity was an outgrowth of the realization that it was difficult for the project and farmers to obtain certified improved seeds produced locally within South Sudan because the seed system is not yet developed. Apparently, most farmers have been planting farm-saved seeds kept from the previous seasons or seeds obtained from development partners as grants. Sometimes they buy seeds from other farmers or open markets. Although farmers have been buying seed from open markets for planting, these seeds are categorically "grain meant for consumption," with no guarantee of any quality in germinability and in-field standability. Due to the scarcity of seeds, development partners in most cases have been forced to distribute uncertified seeds, because farmers desperately look for seeds to plant in an effort to solve the problem of food insecurity.

So far, the project has managed to support eight smallholder farmers' fields from seven FBOs to pioneer seed multiplication in CES. Three multiplication fields belong to individual farmers while five fields are owned communally by the members in the FBOs (as shown in Table 7 below). FARM production staff hope that the undertaking to have improved seed produced locally by smallholder farmers within South Sudan will reduce the problem of scarcity and improve farmers' access to locally produced improved seed.

The participating farmers self-selected themselves but were supported to participate since they had shown greater potential to understand and to follow procedures involved in seed production. Each FBO and farmer received technical training on minimum standards for seed production. Century Seed Company provided 675 kg of foundation seed of Longe 5 maize variety for the 67.5 feddans being cultivated with Longe 5 maize. A total of 80 kg of groundnut seeds (Red Beauty variety) was provided to Iraga Farmers Group and was planted on a communal garden of two feddans to produce certified seed. Bean seed (K132 foundation seed) was provided to one of the master farmers, Francis Juma, and planted on 0.5 feddan.

Farmers and FBOs involved in seed multiplication had to commit to plow the land being used for seed multiplication. The FARM Project provided cost-share plowing grants for 70 feddans, with farmers contributing 20 percent of the grant value. The project also provided 100 percent grants for the seed obtained from Century Seed Company for farmers. For the first time since independence, South Sudanese, with the assistance of FARM, have facilitated a process for local certified seed production in South Sudan. Everyone hopes that this activity has paved the way and that larger-scale commercial seed producers will establish local seed farms in the near future. Table 8 presents the certified seed production program being facilitated by the project.

Table 6: FBOs and Farmers Participating in Seed Multiplication for Three Crops

County	FBO	Ownership	Number of Farmers		Number of Feddans		
			M	F	Maize	Groundnut	Beans
Yei	Isanganga Cooperative Society	Communal	34	4	10	-	-
	Undukori Cooperative Society	Kenedy Idoru	1	-	5	-	-
		Confusas Lugala	1	-	5	-	-
Morobo	Iraga FBO	Communal	8	5	12	2	-
	Ajugi Highland Cooperative Society	Francis Juma	1		12.5	-	0.5
Kajokeji	Ngigiret Na Nyei Farmers' Group	Communal	6	5	10	-	-
	Lomeri ti Dara Moro Farmers' Group	Communal	9	7	4	-	-
	Bamure Women's Group	Communal	21	29	9	-	-
Totals	**7 Groups**	**8 Gardens**	**81**	**50**	**67.5**	**2**	**0.5**

Source: FARM Project 2013.

The FARM Project initiated a smallholder seed multiplication system and organized farmers into producer organizations. This is preparing them to be market-ready cohorts that will produce crops for the market, reducing the current dependence on unpredictable imports of commercial foods, which disrupt markets for private producers. The fact that smallholder farmers are now using improved seeds when available and that some are engaged in certified seed production in the country signifies a good step forward in the advent of a local seed production and distribution system.

3.2.7. Challenges with Crop Varieties as Related to Agricultural Production

Although the TME 14 cassava variety is high-yielding and offers potential for commercial processing, but, like all mosaic virus-resistant varieties, it cannot stay in the ground much longer than 12 months and has to be harvested as the roots begin to lignify (i.e., turn woody). Culturally, farmers harvest a few plants at a time; as a result, harvesting technologies for the crop are not advanced. It is difficult to lift cassava roots up from the ground, especially when grown on flat beds. This also poses a challenge to farmers, as they cannot harvest this crop fast enough or store this variety in the ground longer than a 12 to 18-month period. In addition, the cassava cuttings used for propagation are bulky and perishable, making it difficult to transport them over long distances before they dry up.

Sourcing of improved varieties within the country is difficult because only the local cultivars are available, even though in most cases they are low-yielding and vulnerable to diseases and pest infestations.

Some varieties of white sorghum, such as Seso varieties, are vulnerable to weevils and birds. Weevils attack them as soon as they mature in the field. Unfortunately, farmers do not have storage technologies available to control these pests, either before or after harvest. They also do not have readily available markets for sorghum once harvested.

3.3. CASSAVA MULTIPLICATION AND EVALUATION

Cassava is an important food crop. It is widely grown and consumed by smallholder subsistence farmers in South Sudan, particularly in the Greenbelt area. Although the crop grows well in various soil types and ecologies, the FARM Project is working in collaboration with MAFTARFCRD to evaluate and multiply new varieties of the NASE series released from Uganda, and some International Institute of Tropical Agriculture (IITA) lines. Cassava was one of the crops chosen to be worked on in South Sudan because of its potential to be planted alone or in association with both cereals and legumes. In addition, growing cassava is not very labor-intensive, except when a large volume needs to be harvested and when soils are dry. Currently, with the traditional varieties and farming practices, the expected yield is between 1 and 15 metric tons of tubers per hectare (ha), depending upon the severity of the cassava mosaic virus (CMV). The introduction of new varieties such as TME 14 and NASE 14, which are resistant to CMV, has led to much-improved yields—up to about 30 MT per hectare. While the tubers can be processed into food for domestic consumption and for regional markets, the cassava leaves offer another opportunity to improve human diets since they are rich in iron and protein. As observed in the past two years, the stem of the improved cassava varieties can also be sold as planting material. Currently, evaluation and multiplication work is underway in Palotaka, Yei, Jambo, Bur, Mundri, Yambio, and Maridi. The varieties in the field are the NASE series, 14 to 19, and TME 14 as a check.

The major challenge to cassava cultivation in South Sudan, as experienced by the FARM Project, has been the limited availability of improved varieties with resistance or tolerance to the most significant diseases, such as CMV and the cassava brown streak virus. One step toward addressing these problems is to introduce improved varieties that are tolerant or resistant to these diseases. The NASE series, in addition to being high-yielding, has those attributes. The only problems are that they have not been evaluated in the country and the seed quantities have not been multiplied enough to allow for any meaningful production.

During the year under review, the FARM Project purchased a total of 133,100 kg of cassava cuttings from local sources, using two selected vendors: Fulaa Lifeline in EES and Matrix International in CES and WES. This was a 121 percent increase over last year, when the project sourced 60,000 kg of cassava cuttings in-country. A total of 33,300 kg was purchased and distributed in EES, while 69,200 kg was

purchased and distributed in CES. In WES, the plan was to purchase and distribute 49,000 kg. This target was not reached; the vendor could not supply Mundri West since it was too late in the season for farmers to be able to establish the crop in this location. For this reason, only Yambio and Maridi were supplied with cuttings amounting to 30,600 kg. Table 8 below shows the number of FBOs that received cassava cuttings in each county that was sourced within each state. Each county supplied farmers with internally sourced cuttings, except where shortfalls were experienced (such as in Ikwotos, which received cuttings from Torit County). No interstate cross-border transfer of cuttings was allowed, to reduce the chances of disease transmission from state to state.

There were many challenges encountered in this local sourcing of cassava, such as diseases and poor cutting quality since farmers were not producing the stems for seed. The vendors had logistical issues, as well, related to delivery to designated warehouses. Nonetheless, a total of SSP 277,000 was injected into the local economy as a result of this local procurement process. This procurement effort is considered a success; it was the first time that the project managed to source about 90 percent of the required cassava through local vendors. This effort also economically empowered the local farmers who sold the cuttings and built local vendors' capacity to do business in seed cassava.

Table 7: Cassava Cuttings Procured and Delivered Locally

State	County	FBOs	Farmers	Seed (kg)
Eastern Equatoria State	Magwi	16	411	18,600
	Ikwoto	7	110	6,800
	Torit	7	179	7,900
	EES Subtotal	**30**	**700**	**33,300**
Central Equatoria State	Yei	10	252	18,900
	Morobo	9	395	23,600
	Kajokeji	12	1,182	26,700
	CES Subtotal	**31**	**1,829**	**69,200**
Western Equatoria State	Yambio	23	493	20,000
	Mundri West	-	-	-
	Maridi	18	296	10,600
	WES Subtotal	**41**	**789**	**30,600**
FARM	**FARM**	**102**	**3,318**	**133,100**

3.4. PLOWING AND HARROWING GRANTS

Farmers seeking to expand land under production are faced with a lack of land-preparation technologies and service providers in rural areas. The FARM Project's plowing and harrowing grants, which are offered to selected farmers, are addressing this challenge. This investment is consistent with the government's policy of stimulating agricultural growth and poverty-reduction among smallholder

farmers in the rural areas by expanding land for production in a sustainable manner. In the past three years, the FARM Project has implemented a combined approach of environmentally sustainable mechanized land preparation by using four-wheeled tractors and animal traction. Two-wheeled tractors had been introduced where there were not service providers, but without success. The decision on which technology to use was mostly dependent on availability of the service providers. Field planning for land preparation was organized to maximize the efficient use of the selected technology, looking at cost implications and distances between the locations of the service provider and the farm to be plowed. A rapid assessment was conducted between December 2012 and February 2013 to determine the following:

- Availability of service providers
- Availability of labor and equipment
- Cost-efficiency
- Scale of operation (number of feddans that can be handled at a given time)
- Quality of work and timeliness
- Environmental consequences of the activity on the field location
- Availability of competent personnel to operate the machinery
- Availability of work oxen
- Ability to organize and carry out maintenance and repair tasks in a successful way
- Willingness of beneficiaries to contribute 20 percent of the grant value

3.4.1. Payment of 20 Percent Cost-Share Contribution

During FY 2013, the FARM Project identified and selected 117 FBOs for plowing and harrowing grants. Beneficiaries were asked to contribute 20 percent up front, making a payment to the service provider while the FARM Project paid the remaining 80 percent. The 20 percent contributions were meant to instill a sense of ownership by the program beneficiaries and make them aware of the cost implications of doing farming as a business. Out of the 117 FBOs selected for the plowing grants, 97 FBOs (83 percent) paid the 20 percent contribution, while 20 FBOs declined to pay, saying they did not have the money. However, this move to have beneficiaries contribute is one way of helping communities move from dependence to self-reliance. Many farmers are expected to be willing to pay the 20 percent cost-share for plowing during the coming year, as they become more aware of the importance of ownership and self-reliance.

Table 8: Summary of FBOs that Paid 20 Percent Cost-Share and Those that Declined, per County

State	County	FBO Target	FBO Paid 20 Percent	FBO Declined
Eastern Equatoria State	Magwi	20	19	1
	Ikwoto	6	6	0
	Torit	13	4	9
	Subtotals	**39**	**29**	**10**
Central Equatoria State	Yei	13	12	1
	Morobo	16	15	1
	Kajokeji	13	13	0
	Subtotals	**42**	**40**	**2**
Western Equatoria State	Yambio	11	11	0
	Mundri	16	10	6
	Maridi	9	7	2
	Subtotals	**36**	**28**	**8**
FARM FY 2013		117	97	20
FARM FY 2012		76	Na	Na
FARM FY 2011		44	Na	Na

3.4.2. Area in Feddans Identified and Plowed in 2013

The FARM Project identified a total of 913 feddans to be plowed under its Innovative Grants Facility (IGF). Of this amount, 739 feddans were plowed, representing about 81 percent. The feddans not plowed were largely the result of some farmers' unwillingness to pay the 20 percent cost-share. Nonetheless, this area is higher than FY 2012's achievement of 529 feddans; it represents about a 40 percent increase. It is also 96 percent higher than FY 2011's area of 377 feddans, which could be regarded as the baseline value. The fact that most farmers paid the 20 percent contribution means that they understood the importance of their contribution and they are aware that the plowing services provide a benefit to them. The aim is for these beneficiaries to create a cohort of motivated, market-ready farmers.

Table 9: Summary of Achievements for FY 2013 Plowing Grants, by County

State	County	FBO Target	Plan Fed	Achieved	Percent Success	Balance
Eastern Equatoria State	Magwi	20	123	118	95.93	5
	Ikwoto	6	43	37	86.05	6
	Torit	13	89	19	21.35	70
	Subtotal	**39**	**255**	**174**	**68.24**	**81**

Central Equatoria State	Yei	13	160	130	81.25	30
	Morobo	16	116	109	93.97	7
	Kajokeji	13	155	155	100.00	0
Subtotal		**42**	**431**	**394**	**91.42**	**37**
Western Equatoria State	Yambio	11	72	65	90.28	7
	Mundri	16	98	67	68.37	31
	Maridi	9	57	39	68.42	18
Subtotal		**36**	**227**	**171**	**75.33**	**56**
FARM FY 2013		117	913	739	80.94	174
FARM FY 2012		76	600	529	88.17	71
FARM FY 2011		44	900	377	41.89	523

Source: FARM Project 2013.

3.4.3. Use of Four-Wheeled Tractor and Animal Traction

To facilitate land preparation that would expand area for production, the number of FBOs participating in FARM's plowing IGF increased from 41 (out of 44 planned) in FY 2011 to 76 in FY 2012 and to 97 (out of 117 planned) in FY 2013. These FBOs were selected from a list of those that had not benefited from the facility in previous years. To date, 214 FBOs out of the project's 497 FBO partners have benefited from FARM's plowing grants facility. A cumulative area of 1,645 feddans for smallholders has been plowed as a result of this initiative.

In the period under review, 34 service providers were identified across the project area. Of this number, 20 provided four-wheeled tractors that plowed 603 feddans and 14 provided animal traction services that plowed 136 feddans. The area plowed by tractor increased by 30 percent over last year; that plowed by animal traction increased by 106 percent over last year. The use of animal traction has been a positive undertaking; some farmers have started using the work oxen and others are requesting trainings on how to use work oxen in plowing. Ox plowing was not a traditional production system in South Sudan. However, farmers in Magwi and Kajokeji who traveled to Uganda encountered the use of oxen for cultivation and some of the farmers in Mundri West have also taken up the technology. The amount of land that is plowed using oxen in the Greenbelt is slowly increasing. Training requests have come from Ikwotos and Magwi in EES and Mundri West in WES. Figure 4 below illustrates the change in feddans plowed by tractor and animal traction over the last three years. Table 11 shows the planned areas compared with achievements.

Figure 4: Adoption Curves for Tractor and Work Oxen Technologies

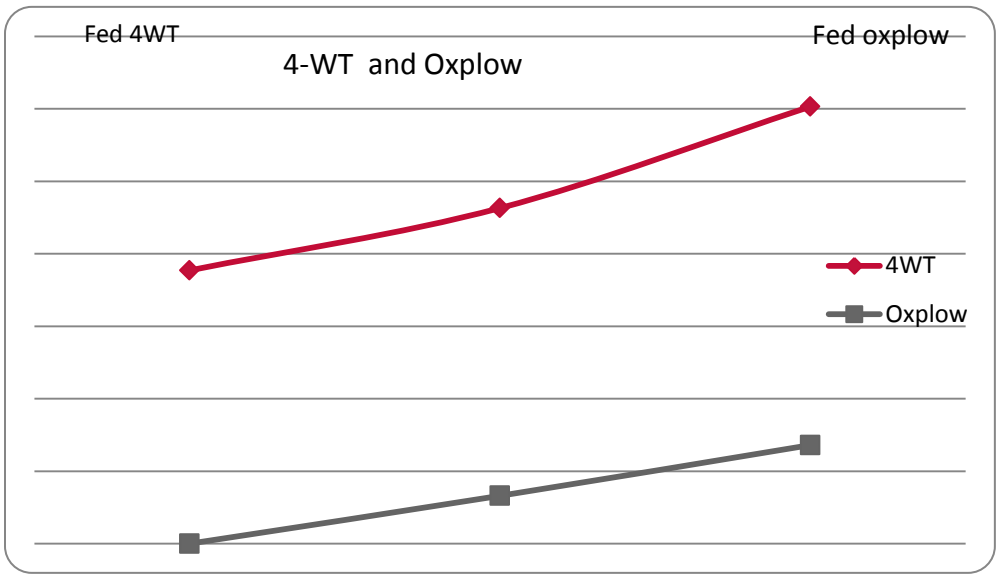


Table 10: Comparison of Feddanage Plowed by Four-Wheeled Tractor and Ox plow

Program Year	No. of FBOs	Plowed by Tractor		Plowed by Ox plow		Totals		Remarks
		Plan	Achv'd	Plan	Achv'd	Plan	Achv'd	
FARM FY 2013	97	761	603	152	136	913	739	20% cost-share introduced for first time.
FARM FY 2012	76	534	463	66	66	600	529	First ox-plow trials.
FARM FY 2011	41	900	377	-	-	900	377	No ox-plow was planned.

Source: The FARM Project 2013.

3.4.4. Financial Implications of the Two Technologies

An amount of $19,200, representing about 15 percent of the total grant value, was paid out to ox plow service providers, while $111,550 was paid to tractor service providers. The beneficiaries who used animal traction paid an average of $140 per feddan for both plowing and harrowing. Both sets of beneficiaries paid the cost-share amount of 20 percent of the grant value. However, the beneficiaries who used tractor service providers paid an average of $185 per feddan for both plowing and harrowing. The project is promoting the use of animal traction and is working to reduce the 20 percent cost share for those opting to use ox-plow service providers.

3.5. RAINFALL DATA COLLECTION

A total of 13 out of 27 locations had above-average rainfall for the year, while 14 locations had below-average annual rainfall. The average annual rainfall up through September 2013 was 1,000 mm. There has been a wide range of differences, however, and some locations were badly affected, with just above or below 500 mm. Such areas included Munuki in Juba, and Iyre, Kudo, Ifwotu, and Ikwotos in EES.

These varying rainfall totals are a vital consideration in determining the advice that the FARM Project provides to farmers in particular areas, particularly regarding crop selection and time of planting. Figure 5 shows the total rainfall up to September 2013, and Table 12 shows monthly precipitation in each location.

Figure 5: Total Rainfall (mm) up to September 2013

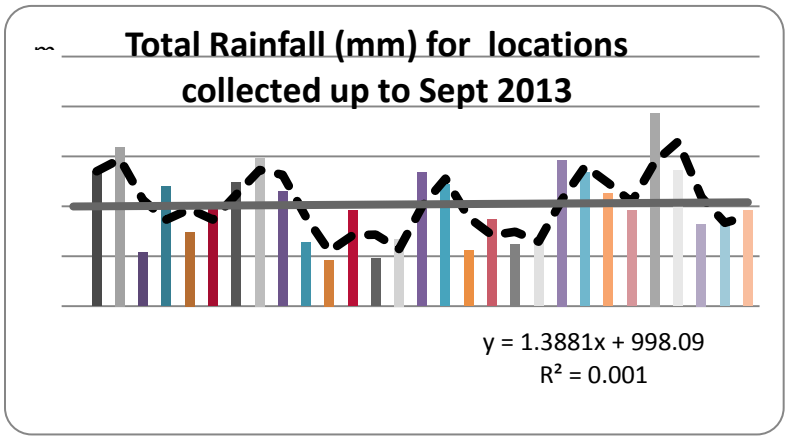


Table 11: Monthly Precipitation for Each Location

Rain Gauge Location		Monthly Rainfall Total (mm)									Total Annual Rainfall (mm)
Payam	**Station**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	
Gulumbi	Girilli	96.00	0.00	88.00	159.00	130.75	254.00	231.00	230.00	162.20	1,350.95
Kimba	Kimba	117.00	0.00	149.00	182.00	165.00	168.00	192.00	368.00	251.00	1,592.00
Munuki	Juba Town	5.00	11.00	35.30	80.40	108.00	66.60	91.30	30.70	108.50	536.80
Wudabi	Aloto	113.00	0.00	158.60	165.00	84.00	154.00	176.00	182.50	168.20	1,201.30
Kangapo 2	Bori	0.00	0.00	83.80	137.70	86.00	52.00	115.00	198.50	72.90	745.90
Lire	Mogiri	0.00	0.00	69.50	259.00	152.50	131.00	112.50	227.50	40.00	992.00
Mugwo	Jambo	51.20	0.00	48.00	115.60	130.00	147.00	259.90	250.00	238.00	1,239.70
Ottogo	Kurujule	57.00	0.00	107.00	188.00	141.50	262.50	230.50	306.00	193.00	1,485.50
Lasu	Lasu	59.50	0.00	88.50	90.50	124.50	182.50	147.50	141.50	315.00	1,149.50
Lyire	Haramorok	0.00	0.00	13.00	67.60	93.90	102.00	99.00	169.00	91.00	635.50
Kudo	Hotyalla	0.00	0.00	11.10	83.20	26.00	101.50	71.00	98.50	72.00	463.30
Imurok	Ifoho	0.00	0.00	0.00	123.30	157.50	122.50	195.50	273.00	89.50	961.30
Ifwotu	Imokoru	0.00	0.00	24.00	52.00	38.00	70.00	115.00	122.00	55.00	476.00
Ifune	Ikwoto Town	3.30	0.80	90.80	62.50	51.50	50.50	142.50	94.50	176.00	672.40
Lomohindang North	Isohe	0.00	22.10	49.00	115.00	75.00	78.00	283.00	364.00	351.00	1,337.10

Rain Gauge Location		Monthly Rainfall Total (mm)									Total Annual Rainfall (mm)
Payam	**Station**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	
Katire Central	Katire Center	100.50	6.90	103.00	18.10	213.00	153.00	235.50	178.00	211.50	1,219.50
Ikwoto	Tseretenya	0.00	15.50	19.30	57.30	2.00	49.50	125.50	176.00	110.00	555.10
Pageri	Moli Andru	0.00	0.00	113.80	118.80	101.70	109.50	126.50	221.50	75.00	866.80
Magwi	Obbo MII	0.00	0.00	56.60	112.40	50.30	70.00	28.00	157.60	148.00	622.90
Parjok	Parjok	0.00	0.00	35.00	237.40	58.50	13.00	79.50	79.50	166.00	668.90
Yambio Town	Gitikiri	0.00	23.00	76.00	247.00	225.00	129.00	131.00	346.50	286.00	1,463.50
Ri-Rangu	Ri-Rangu	23.00	19.00	85.50	171.00	179.00	110.00	304.00	199.00	248.50	1,339.00
Bangasu	Makpandu	19.00	50.00	25.00	125.00	182.10	62.00	112.00	276.00	277.20	1,128.30
Maridi Town	Malakia	13.00	15.00	45.40	132.50	130.50	180.50	32.00	144.00	268.50	961.40
Mambe	Malaga	48.00	226.00	279.00	144.00	97.50	147.00	37.00	362.00	593.80	1,934.30
Landili	Dorolili	18.00	0.00	113.50	118.60	115.00	121.00	199.50	410.50	265.50	1,361.60
Mundri Town	Anigo	0.00	4.50	20.00	148.70	52.50	113.50	34.50	226.00	223.50	823.20
Kotobi	Mandi	2.50	19.00	48.50	90.50	81.00	165.50	125.50	152.50	161.00	846.00
Bangallo	Bangallo	28.00	11.00	39.00	45.00	51.00	105.00	247.00	254.00	179.00	959.00

3.6. COUNTY DEMONSTRATION PLOTS

Demonstration plots prepared in FY 2013 were meant to demonstrate to farmers in a dramatic and practical fashion the yield differences that any farmer could benefit from by using the improved seed varieties and applying the best management practices. In South Sudan, hybrid seeds and NASE cassava varieties are new technologies being introduced in the project area. The FARM Project established demonstration plots at county levels this year, which were managed by FARM and MAFTARFCRD extensionists working in collaboration to undertake research on the implementation protocol, particularly on cassava. A total of nine demonstration plots were jointly established by FARM, MAFTARFCRD field staff, and farmers. Apart from one in EES, these sites were located in strategic areas where FBOs were able to participate in activities. This provided the farmers with learning opportunities and a chance to view different stages of crop development. The farmers were able to see the newly introduced technologies being demonstrated, including new crop varieties (see table below). Apart from the open pollinated variety and hybrid maize, new varieties of cassava and beans were planted to create awareness about the availability of the techniques and planting material. The locations of the demonstrations plots were Bur (Torit), Ikwotos, and Obbo Counties in EES; Yei, Morobo, and Kajokeji Counties in CES; and Yambio, Maridi, and Mundri (Kotobi) Counties in WES.

Table 12: Preliminary Results for Three Maize Varieties and Repetitions for Mundri, Maridi, and Yambio Counties

Variety	Weight (kg/ha)		
	Mundri	Maridi	Yambio
Longe 4 R1	3,386	**4,024**	4,726
Longe 4 R2	1,182	3,882	3,828
Longe 5 R1	2,349	2,207	3,641
Longe 5 R2	1,682	5,881	4,006
Longe 6 R1	2,182	3,521	2,950
Longe 6 R2	2,773	2,461	2,795
Longe 10 R1	3,712	7,769	4,331
Longe 10 R2	3,664	4,220	5,505
Minimum Yield for Maize	1,182	2,207	2,795
Maximum Yield for Maize	3,712	7,769	5,505
Percent Increase	214%	252%	97%
Average Yield for Maize	2,616	4,246	3,973

The introduction of new and improved varieties of crops through these demonstration plots was aimed at enhancing plant productivity, plant quality, and plant health, and at introducing aspects of crop diversification and good agronomic practices into the local cropping systems to improve crop productivity. The reasons for introducing new crop varieties and improving productivity were manifold: increasing income on small farm holdings; strengthening farmers against price fluctuations; mitigating the effects of increasing climate variability; balancing food demand and nutrition; promoting crop rotation as a soil conservation measure; decreasing insect pests, diseases, and weed problems; and, overall, contributing to community food security.

Project staff collected data from Yambio, Maridi, and Mundri in WES. The yield levels were close to expectations. The lowest yield of maize in a demonstration trial was in Mundri West, which recorded 1,182 kg/ha, the equivalent of 496 kg/feddan, from the old variety Longe 4, while the maximum yield level was obtained from the plot in Maridi, which recorded the equivalent of 7,769 kg/ha (3,264 kg/feddan) on the newly introduced hybrid Longe 10 H maize variety. Table 13 above presents the preliminary results for three maize varieties and repetitions for Mundri, Maridi, and Yambio counties. The results from other areas were not yet available at the time this report was compiled; this information will be included in subsequent reports.

3.7. FIELD DAYS CONDUCTED ON DEMONSTRATION PLOTS

Field day events are good sources of agricultural information, as organizers arrange for various guest speakers to talk on a range of issues affecting agriculture in different counties. In WES, the State Minister of Agriculture was the guest speaker at the Yambio Field Day. In other locations, the county commissioners or their representatives were guest speakers. These speakers facilitated interactions that fostered linkages among farmers, the public sector, the NGO community, and the private sector.

The farmer field day process used a participatory approach to create awareness of the available production technologies. The aim was for farmers to adopt accepted varieties that can potentially strengthen their cropping systems. Participatory approaches like these increase the validity, accuracy, and particularly the efficiency of the extension process and its outputs. When farmers make choices based on what they have seen and discussed, project implementers are better informed about the assistance they should provide to beneficiaries. Participatory processes also enhance farmers' capacity to seek information, strengthen social organization, and make available first-hand information on different crop varieties and management practices being demonstrated on the plots. Opportunities arise when a cross-section of participants attend these field days, as was the case in WES. Such participation can constitute a market strategy because of the integration of various actors across the value chain, from producers to buyers and consumers. Opportunities may arise for partnerships between producers, extension staff from the development partners, and government and researchers, as well as the private sector. During the review period, field days conducted in all nine locations attracted 521 participants—373 males and 148 females. In EES, a total of 69 participants attended the field days, while a total of 230 participants attended in CES and 222 attended in WES. Table 14 below summarizes attendance at the field days for each demonstration location in FY 2013.

Table 13: Summary of Number of Participants Attending Field Days in Various Locations, FY 2013

State	County	Demonstration Site	Technologies	Field Day Activities	Male	Female	Total
Eastern Equatoria State	Ikwotos	Ikwotos Central	Line planting, plant spacing, varieties	Land preparation, weeding, and harvesting	12	4	16
	Torit	Bur	Cassava multiplication	Weeding, disease inspection	23	2	25
	Magwi	Obbo	Line planting, plant spacing, varieties	Land preparation, weeding, and harvesting	3	25	28
				EES Subtotal	38	31	69

State	County	Demonstration Site	Technologies	Field Day Activities	Male	Female	Total
Central Equatoria State	Yei	Yei	Line planting, plant spacing, varieties	Land preparation, weeding, and harvesting	56	24	80
	Morobo	Morobo	Line planting, plant spacing, varieties	Land preparation, weeding, and harvesting	65	10	75
	Kajokeji	Kajokeji	Line planting, plant spacing, varieties	Land preparation, weeding, and harvesting	40	35	75
				CES Subtotal	161	69	230
Western Equatoria State	Yambio	Yambio	Line planting, plant spacing, varieties	Land preparation, weeding, and harvesting	76	27	103
	Maridi	Maridi	Line planting, plant spacing, varieties	Land preparation, weeding, and harvesting	50	5	55
	Mundri	Kotobi	Line planting, plant spacing, varieties	Land preparation, weeding, and harvesting	48	16	64
				WES Subtotal	174	48	222
FARM					373	148	521

4. COMPONENT 2: TRADE AND MARKETING

4.1. INTRODUCTION

The FARM Project promotes economic growth to reduce poverty and food insecurity by improving the efficiencies of staple food value chains, in which large numbers of smallholders participate. FARM is investing in market access, smallholder productivity, and other interventions that address the constraints at various points along selected value chains.

Most of FARM's work during the first half of the project focused on agricultural production in maize, sorghum, groundnuts, and cassava. The main interventions have included improved seed distribution, training in agronomy, land reclamation and preparation, post-harvest storage, and the development of FBOs.

FARM technicians expect production gains will soon yield significant surplus harvests. Over the past year, the project has made the development of markets for smallholder farmers a priority. Weak infrastructure, poor business linkages, and a virtually nonexistent market information system limit access to markets throughout the project area. The FARM Project has consequently been working to increase the availability of market services and smallholders' access to them, particularly along principal trade routes. The FARM Project is also undertaking initiatives to improve the legal, regulatory, and policy environment that governs marketing and trade.

Agricultural marketing presents great challenges to many producers, as they lack knowledge and skills on how to identify, access, evaluate, and plan for marketing opportunities. Reluctance to look for markets, lack of knowledge on existing markets, and difficulties in identifying and addressing market opportunities and constraints warrant the need to build the marketing capacity of FBOs and the newly formed cooperative unions. Over the course of the past year, FARM has supported MAFTARFCRD's efforts to promote agricultural fairs and shows as a means of highlighting marketing opportunities.

4.2. NATIONAL AGRICULTURAL TRADE FAIR

As part of a strategy to spur economic development in a predominantly agricultural economy, the project provided significant support to South Sudan's second National Agricultural Trade Fair, held from November 27 to 30, 2012, at Nyakuron Cultural Center in Juba. The objective of this significant event was to provide national and international participants with the opportunity to negotiate business deals for agricultural products and equipment and to learn more about investing in the agribusiness sector in South Sudan. The fair also showcased new agricultural technologies and services to one of the fastest growing markets in Eastern Africa.

FARM provided a consultant to support the organization of the national fair. MAFTARFCRD selected the consultant from a shortlist of candidates presented by the FARM Project. The consultant arrived in-country on September 6, 2012, and remained until December 5, 2012, working within MAFTARFCRD with a local coordinator and six ministry working groups covering protocol, logistics, finance, and communication.

Although a direct comparison is not possible between the first fair in 2011 and the second in 2012, it appears that the most recent fair had a larger number of visitors: 5,000 ticketholders compared with 2,300 for the first trade fair. (Admission was SSP 3 in 2011 and SSP 1 in 2012.)

There were also more stalls in 2012 than in 2011, including a large delegation from Tanzania that brought a wide variety of non-agricultural commodities to sell. At the successful conclusion of the Second National Agriculture Trade Fair, the former Minister of Agriculture, Forestry, Tourism, Animal Resources, Fisheries, Cooperatives and Rural Development, the Honorable Betty Achan Ogwaro, congratulated Jonglei for having the best stand among the states. Western Bahr el Ghazal was second and Eastern Equatoria came in third. A full report was provided as an annex in the April 2013 Semi-annual FARM Project Report.

4.3. STATE AGRICULTURAL SHOWS

Agricultural shows are organized in the states to enable farmers to showcase their production potential, learn modern technologies, and access inputs and output markets. After the first National Agricultural Trade Fair (ATF) was held in Juba in 2011, the ministry recommended that agricultural shows be conducted in each of the ten states to select outstanding farmers to represent the rest of the farmers in the national ATF. To enable the state Ministries of Agriculture to conduct agricultural shows in the Greenbelt zone, the project conducted a two-day training to set up committees on how to organize and implement such events. The trainings were conducted in October 2012 in the three Equatoria states and drew participants from MAFTARFCRD and the Ministry of Health, Department of Nutrition; the Ministry of Physical Infrastructure, Department of Surveys; and other developmental partners.

Table 14: Number of People Trained

State	Total Number	Number of Men	Number of Women
Eastern Equatoria State	45	38	7
Western Equatoria State	20	20	0
Central Equatoria State	27	5	22
Totals	92	63	29

Source: FARM Project Training Reports

One of the outputs of these training events was the development of a concept paper with an illustrative budget for agricultural shows. The project also supported the various ministries in the development and printing of communication products in Western and Eastern Equatoria States. Despite having staff trained, Central Equatoria State was unable to organize a show.

The project sponsored 60 farmers to attend the two agricultural shows: 31 (26 male and 5 female) in Eastern Equatoria State and 29 (25 male and 4 female) in Western Equatoria State. These agriculture shows were held during October and November 2012 for Eastern and Western Equatoria respectively. In addition, the project supported the two state ministries in printing banners, posters, brochures, and invitation cards.

Three of the farmers supported by FARM emerged as the winners in Eastern Equatoria State, hence they were selected to participate in the 2012 National Agricultural Trade Fair. After the shows, an evaluation was done to ascertain whether the objectives of event were met; the results clearly showed

that farmers sold their produce, bought farm inputs, and were exposed to the different examples of modern technology displayed. Table 16 below shows the result of the assessment.

Table 15: Farmers Linked to Markets through Agricultural Shows

Product	Number of Exhibitors	Quantity Sold (kg)	Revenue (SSP)
Maize	32	4,095	9,456
Groundnuts	18	573	2,424
Cassava	18	510	1,050
Sorghum	4	22	275
Beans	7	163	130
Pumpkins	5	80	300
Potato	9	552	739
Honey[1]	7	7	2,300
Oranges	5	140	47
Cow peas	4	32	160
Sheep[2]	1	2	800
Goats[3]	2	4	1,550
Pineapples[4]	2	1	252
Number of Farmers Linked To Agricultural Service Providers			
Traders			10
Agro-dealers			14
Processors			9
Farmers			32
Number of Farmers Who Purchased Inputs			
Hoes			17
Machete			14
Oxen			2
Rake			1
Seeds			17
Seedlings			7
Axe			6
Sprayer			2
Pesticide			1
Slashers			5
Artcraft			1

1. Note[1] = Honey is measured in buckets.
2. Note[2-4] = These are sold in units.

4.4. CASSAVA PROCESSING

One of the objectives of the project is to enhance the competitiveness of farmers in the Greenbelt zone. Facilitating the flow of information about marketing requirement (in terms of quality, type, prices, weight/volumes, and packing requirements) is a prerequisite to any intervention. In order to assess the current awareness of the FARM-assisted FBOs in this regard, and to understand market dynamics of the four targeted crops, the project conducted a market assessment in 14 markets. The results of the

study showed that locally processed cassava chips are outcompeted in the markets by imported cassava chips due to quality shortcomings. Uganda-style chips are usually made from sweet cassava varieties that are washed and then dried. Local cassava varieties, which tend to have a high level of cyanide in the roots, have to be retted by soaking in water for five to seven days, during which time they start to ferment. This leaves the roots very discolored and usually results in a lower market value. Quite often, local cassava production is converted into flour after fermentation. The FARM project has been distributing TME14, which is a sweet variety.

In a follow-up study, FARM staff conducted a training needs assessment to understand the level of cassava-processing knowledge and skills of local farmers in targeted locations. It was clear from the assessment that local farmers are not able to produce cassava chips of the required quality; they simply lack the technical know-how to process Ugandan-style cassava chips.

In order to address this gap, FARM developed and produced a cassava-processing training manual. In order to reach all the farmers, five training-of-trainer (ToT) events were carried out to train FBO extension workers. There were 24 ToTs for 30 groups over 2012 and 2013 in Morobo County in Central Equatoria.

The chip-making intervention was expanded to Yei County because the new varieties of cassava that have been introduced by FARM and other agencies—although far more productive than traditional varieties and resistant to the destructive mosaic virus—require harvesting after 12 months of cultivation, rather than years for the traditional varieties. FARM staff trained 62 farmers from the Jujumbita, Longurupi, and Nyakoyi FBOs in Yei-Lasu Payam in CES. The project trainers also trained an additional 32 farmers for the NGO Farm Africa in Juba County. In Gulumbi Payam, FARM trained 17 farmers who were not part of the 30 FBOs which had been trained in Morobo County.

Twenty-four 50 kg bags of cassava chips were produced from all the training events. Group members benefited from the income generated from the sale of the chips. An FBO member from Kimba Payam offered his cassava for processing and obtained ten 100 kg bags of cassava chips. He not only benefited from the free labor but also obtained income from the sale of the chips. The project was not advised of sales of cassava chips following these activities, although FARM is aware of significant quantities of product available for sale in Morobo County.

Table 16: Numbers of FBOs and Members Trained in Cassava-Chip Processing

Payam	Year: FY 2012				Year: FY 2013			
	FBOs Trained	Women Trained	Men Trained	Total Trained	FBOs Trained	Women Trained	Men Trained	Total Trained
Kimba	8	112	84	196	2	22	19	41
Gulumbi	7	66	88	154	4	57	45	102
Wudabi	0	0	0	0	9	71	115	186
Lasu	0	0	0		3	21	41	62
Total	**15**	**178**	**172**	**350**	**18**	**171**	**220**	**391**

Source: FARM Project Training Reports.

To enable the trained groups to review and refresh their knowledge, 185 cassava-processing manuals were distributed. Some were given to the county agricultural department and project main field office in Central Equatoria State.

4.5. POST-HARVEST EQUIPMENT

4.5.1. Drying and Storage

During FY 2013, the project tried to assess the impact of equipment delivered during the year. However by the middle of the reporting period, it became clear that data from the field was not forthcoming and there was no established system in place to record storage losses among selected farmers. As a result, a new protocol was developed that will be tested in FY 2014.

4.5.2. On-Farm Basic Processing

Agriculture is a priority of South Sudan because of the obvious unrealized production potential and the dramatically increased productivity of some well-known food crops. The FARM Project has realized that production alone is not sufficient; it needs to be complemented by improved post-harvest handling, including value addition and other processes that efficiently transform the harvested commodities fast enough to make them fit for storage and market-ready. In order to test basic on-farm processing, the project procured 55 assorted pieces of processing equipment (e.g., manual and motorized maize shellers, groundnut shellers, cassava graters, and cassava chippers). The project demonstrated the possibilities for reducing drudgery in on-farm processing operations, which currently are done manually, often by women, and are exhausting and time-consuming.

In order to identify the proper beneficiaries who are ready to cost-share and who are capable of simple equipment management (including the ability to set aside funds for eventual equipment maintenance costs), FARM staff conducted an assessment that identified progressive farmers, primary cooperative societies, and cooperative unions that would be able to manage the equipment. Primary cooperative societies are legally registered with the County Department of Cooperatives. They have a membership of at least 21 people and are required to have share capital. Unions are also registered, but are an amalgamation of cooperative societies. The results of the assessment showed that intervention through the cooperative unions is more sustainable and leads to wider coverage of processing services, as primary societies and progressive farmers are generally members of a union. The cooperative unions are more business-oriented than the cooperative societies. The project consequently selected six unions and two progressive farmers to be beneficiaries of the processing equipment. The maize sheller was the first priority of the two progressive farmers. After the trials, the equipment was distributed to enable the beneficiaries to hire out the units for use after the first-season harvest of 2013. Within the first week of distribution, the Yei Cooperative Union had hired out its maize sheller to a farmer in Longomere. By the end of the reporting period, the equipment for Magwi County had not yet been distributed because the new cooperative union had not yet completed the registration process.

In an attempt to formalize trade, the project procured weighing scales to standardize measurements. Traditionally, transactions are worked out by volume (e.g., bucket, basin, or bag). The use of hanging scales is limited, although a number of scales are seen at some markets. There is no standard bucket or basin; weight depends on how the commodity is piled in the container and weights will vary for the same volume over the course of a season as moisture is lost or gained. The beneficiaries were given hanging scales in June 2013 to promote a culture of standard measurement when providing services to members and during business transactions. Their use is being monitored, although there is still a preference to use basins and buckets to sell grain in most small markets in the project area.

Table 17: Processing Equipment Distributed to Union Members

Beneficiaries	Type of Equipment
Yei County Union	- Motorized (2) and Manual Maize Shellers - Motorized and Manual Groundnut Shellers - Motorized and Manual Cassava Graters - Motorized and Manual Cassava Chippers - Motorized Sorghum Threshers - Weighing Scales (4)
Morobo County Union	- Motorized and Manual Maize Shellers - Motorized and Manual Groundnut Shellers - Motorized and Manual Sorghum Threshers - Motorized and Manual Cassava Chippers - Motorized Cassava Graters - Weighing Scales (4)
Kajokeji County Union	- Motorized and Manual Maize Shellers - Motorized and Manual Groundnut Shellers - Motorized and Manual Cassava Graters - Motorized and Manual Sorghum Threshers - Weighing Scales (4)
Maridi County Union	- Motorized and Manual Maize Shellers - Motorized and Manual Groundnut Shellers - Motorized and Manual Cassava Graters - Manual Sorghum Threshers - Motorized and Manual Cassava Chippers - Weighing Scales (4)
Mundri County Union	- Motorized and Manual Maize Shellers - Motorized and Manual Groundnut Shellers - Motorized and Manual Sorghum Threshers - Manual Cassava Graters - Motorized and Manual Cassava Chippers - Weighing Scales (4)
Natali Zingisi	- Motorized Maize Shellers - Weighing Scales (2)
Khamis	- Motorized Maize Shellers - Weighing Scales (2)

In order to facilitate the efficient use, maintenance, and management of the processing equipment, and to reduce risks of damage and spoilage, the equipment suppliers and FARM conducted a practical training for the beneficiaries, on a 50/50 cost-share basis. The trainings were carried out in five locations: Yei, Morobo, the Kajokeji Counties of CES, Mundri, and the Maridi Counties of WES. The cooperative unions provided the necessary produce required for the processing trials and training.

Table 18: Number of Union Members Trained on Operation/Maintenance of Equipment

Union	Number of Men	Number of Women
Yei	11	2
Morobo	8	1
Kajokeji	14	3
Mundri	10	4
Maridi	13	1

4.5.3. Maize Milling in Central Equatoria

The NEAT plan for Central Equatoria was to introduce new maize grinding mills. As the first stage in determining how to proceed with this initiative, FARM surveyed the maize mills that are already in place in the three counties of Central Equatoria State where the project operates. Interns from the Wau Catholic University assessed the mills in each location to ascertain their type and their current utilization. In the three counties, 73 maize mills were identified. Of these, 24 are in Yei County, 46 in Kajokeji County, and three in Morobo County. All but two of the mills are hammer mills that produce low-grade flour with very poor storage life due to the presence of the endosperm in the grain. Most of the mills are used for subsistence purposes; they mill maize for the surrounding population. More work is required to build maize-milling capacity and quality. A full report on this project activity is under development.

4.6. COOPERATIVE DEVELOPMENT

4.6.1. Marketing Concept Training

The project has used several market linkage strategies to enable smallholder farmers to gain access to markets for their produce, but in most cases the markets have not materialized due to lack of basic marketing techniques. Hence, the project provided a consultancy to develop a manual to introduce cooperative union members to basic principles of marketing, value chains, and profitability analysis. The curriculum included hands-on topics such as negotiations, contracts, and collaboration. The manual was simplified to match the level of understanding of the farmers. The training was designed for two days; a pilot training was conducted for the Morobo and Yei cooperative unions at the end of the reporting period. A total of 43 participants attended the training, of whom 11 were women.

4.6.2. Marketing Plan Development Training

In the initial stages of formation of the cooperative unions, the project focused more on organizational development of the unions. Although 50 percent of the members of the cooperative societies paid shares and registration fees, there was no clear investment plan, due to lack of knowledge about how to develop business plans to guide the unions on investment opportunities. With the distribution of the value-addition equipment, it is paramount that each cooperative union develop a business plan to guide its operation. The training was aimed at empowering the unions by encouraging them to develop simple business plans, which would be more practical and sustainable than if the project developed the plans for them. The project conducted training for the executives and the management board members in Morobo, Yei, Kajokeji, Mundri, and Maridi. Training in Magwi was put on hold pending the formation of the cooperative union there. Table 20 shows the number of trainees in each location.

Table 19: Number of People Who Attended Marketing Plan and Development Training

Union	Number of Men	Number of Women
Yei	11	2
Morobo	8	1
Kajokeji	14	3
Mundri	10	4
Maridi	13	1

The training exercise was followed by the development of business plans by each union, with guidance from project staff. Because the unions lack equipment such as computers, project staff are assisting

each union to compile the plans. The project will also ensure that the unions are supported to implement their plans through monitoring and follow-up training events.

4.7. OTHER VALUE CHAIN INTERVENTIONS

During the reporting period, the project attempted to assess the challenges of processing groundnuts. Historically, small towns in South Sudan had processed groundnuts into oil, which was sold in local markets. However, the impact of the war on agricultural processing has been such that there is currently no groundnut oil production, although groundnuts are made into paste. The project worked with one women's group to make paste. FARM technical staff need to know more about the economics and logistics of oil production. Although the preliminary work was undertaken in FY 2013 by a consultant to the project,[5] further development of this work is planned for FY 2014.

The project also had the opportunity to make a presentation to a delegation from the United States Congress who came to South Sudan under a CARE learning program. CARE asked the FARM Project to demonstrate some of the project activities being undertaken. Given that it was the middle of the dry season, the project demonstrated cassava production and processing. A group of women who had been trained by FARM in cassava processing was invited to Yei from their homes in Morobo to demonstrate improved cassava chip-making. The congressional staff appreciated their diligence, efficiency, and good humor.

[5] Food, Agribusiness and Rural Markets Project. "The Groundnut Value Chain and Value Addition." Prepared by Abt Associates Inc., Bethesda, MD, September 2013.

5. COMPONENT 3: CAPACITY BUILDING

5.1. INTRODUCTION

Training and capacity building is an integral part of all FARM interventions, a collaborative effort that must be implemented along with all technical activities outlined under Components 1 and 2. Capacity building activities in FY 2013 were very diverse and differed in relation to the targeted beneficiaries. The FARM Project trainings included:

- Seed distribution
- County- and payam-level ToT trainings on GAP (seed distribution; storage; seed-handling; treated seeds; planting techniques for maize, groundnuts, beans, and cassava)
- Smartphone technology
- Two-wheeled tractor use
- Agricultural fair preparation
- Cooperative principles and concepts
- Cooperative capacity building (business management)
- Cassava chip processing (value chain addition)
- Ox-plow use
- Seed selection ToT
- Post-harvest handling and storage
- Processing equipment
- Gender analysis
- Training needs assessment

All of the above trainings are part of a strategy to increase commercial agricultural opportunities in the three equatorial states of South Sudan.

The underlying aim of the capacity building component of the FARM Project is to enhance learning among key stakeholders. One of the challenges to effective capacity building in South Sudan is the wide variation in expectations of what capacity building is and of how effective capacity building is

measured. Diverse approaches were used in FY 2013. In addition to training, the project has continued to support the dissemination of public service announcements, undertaken a field trip to Uganda for South Sudanese farmers, established county agricultural demonstration plots to which farmers were invited, and conducted farmer-to-farmer visits. These activities are all summarized in previous sections of this report.

The FARM Project recognizes that many challenges exist in creating an enabling environment that will allow learning and adoption of new practices. Practices need to be enhanced by policies that legitimize the activities being undertaken. A range of factors meant that project's policy work was not yet completed by the end of FY 2013. These factors included the naming of a new minister; a consolidation of the ministry's existing responsibilities with those of other, now-defunct ministries; changes in staffing; the untimely death of the Director of Planning; and operational delays.

Cost-effective interventions are needed for capacity building. FARM's capacity building strategy has been built around provision of services to the project's four main stakeholders:

- Staff of the ministries of agriculture at the national, state, and county levels
- A cadre of extension staff to be developed to link farmers and resources
- Farmers in the project areas (aimed at both improving productivity and seeking markets for surpluses)
- Service providers who are able to deliver private sector services to the project, through administration of grants for plowing, land reclamation, and provision of inputs

5.2. TRAINING

FARM used several approaches to training conducted during FY 2013:

1. *TOT training.* The project continued to support the development of a training-of-trainer cadre, since there is a need to train large numbers of farmers in basic techniques such as good agronomic practices, post-harvest handling and storage, and seed selection.

2. *Practical training*. Experts trained individuals in the operation of particular machines, particularly ox-plow training for farmers with oxen on how their animals can be used for cultivation and how the animals can be kept in full health. Specialists were brought in from Uganda to train farmers in the use of two-wheeled tractors and post-harvest machinery, which was provided to cooperative unions as an income-generating activity. Practical demonstrations showed farmers how to operate the machines.

3. *Specialist training.* FARM provided this type of training primarily for project staff. This included smartphone training provided to extension agents using the smartphones for data collection, a training needs assessment to identify knowledge gaps that can be addressed by training extension staff, and gender analysis training to understand how the project addresses gender in its work.

4. *Marketing and business development training.* This training was delivered to market-ready groups that have formed themselves into cooperatives and cooperative unions. It addressed the management of cooperatives and the integration and teamwork needed for the cooperative to be successful.

5. *Training for MAFTARFCRD staff.* This covered the management of agricultural shows.

5.2.1. Training-of-Trainer Programs

The FBOs with which FARM interacts are generally at a nascent stage of development. Beyond their need for organizational capacity development, they also need greater technical capacity to serve as effective purveyors of information to their member-farmers. This role is integral to FARM's successful use of these organizations to broaden the project's impact. For example, with respect to the recent seed distribution, FBO leaders were expected to train individual farmers to safely handle, use, and store the seed. The challenge was that they lacked this knowledge themselves and their capacity to impart that information was weak, even if they had it on a technical level.

In response to this challenge, FARM has continued with its ToT program, imparting technical knowledge to FBO and extension leadership while also training them in methods to successfully transfer this knowledge to constituent farmers. With respect to the seed distribution process, for example, FARM's curriculum covers technical aspects of safe handling of seed, as well as approaches to adult learning, training tips for trainers, and effective use of technical media/extension services.

Participants targeted for training included senior extension officers and payam extension officers; MAFTARFCRD officers at the state, county and payam levels; and FBO management committee representatives. These participants were then tasked with presenting the training, using the methods they had been taught and materials provided in the class, to their own constituent farmers who would be receiving the seed for planting.

The ToT program was developed progressively to respond to the different needs of the participants involved in various aspects of the seed distribution initiative. The ToT training plan applied a training strategy of transferring skills to county-established training teams, who in turn trained at the payam and boma levels. The county-level training courses were conducted by the county-level trainers, with assistance from the state- and payam-level facilitators.

The state- and county-level ToT programs for the three states were conducted at different times and venues but ran concurrently. Trainings targeted several categories of specialists, including extension agents; ministry staff from the extension department, rural development department, and cooperatives department; and agronomists specializing in plant protection and post-harvest handling.

Training at the county level was in English, while at the payam and boma levels, the training was in vernacular languages. The ToT training program (course content, lesson plans, schedule, training materials, and seed distribution procedure manual) had previously been submitted and approved by MAFTARFCRD and the FARM Project technical team.

Cassava chip training. The FARM Project conducted a training needs assessment to understand the existing level of cassava-processing knowledge and skills possessed by the farmers in targeted locations. As discussed in section 4.4, it was clear from the assessment that local farmers are not able to produce cassava chips of the quality required; they simply lack the technical know-how to process Ugandan-style cassava chips. In order to address this gap, the FARM Project developed and produced a cassava processing training manual. To reach all the farmers, five ToT events were carried out to train FBO members and extension workers in facilitation skills on cassava processing. Twenty-four ToTs were conducted for all 30 groups identified in Morobo County where this intervention was piloted. Table 17 in section 4.4 shows the number of farmers and FBOs that benefitted from the cassava chip processing training.

5.2.2. Practical Trainings

FARM brought in experts to train individuals in the operation of particular machines and practices. During this reporting period, the project offered the following practical trainings.

A. Post-Harvest Handling and Storage Management

Post-harvest handling and storage management is very important in the context of the agricultural sector of South Sudan, as post-harvest losses of crops have been estimated to be around 40 percent. This training was also meant to improve the quality of grain for sale, to ensure that farmers' produce becomes competitive both nationally and internationally.

This type of training was tailored to benefit new farmers who the project has identified during the reporting period. The timing of the post-harvest training is particularly relevant, because it coincides with the harvest season in South Sudan. Trainings in CES have been concluded, while those at WES and EES are ongoing.

Main objectives

- Equip trainees with sound technologies and practices for post-harvest handling and warehouse management
- Enable participants to identify major losses and find ways to mitigate them
- Enable participants to identify and know factors affecting the quality of stored food or grain
- Demonstrate the reasons why appropriate post-harvest technologies are needed to reduce losses in quality and quantity
- Demonstrate the factors involved in post-harvest handling and mitigate high economic losses
- Understand the basic principles of food storage practices
- Gain skills on appropriate storage procedures that can be applied to reduce pest attacks in local storage facilities

B. Ox-Plow Use

The provision of plowing services is still a big challenge in the Greenbelt area, if not in the whole of South Sudan. To facilitate land preparation to expand the area available for production, the number of FBOs that participated in FARM's plowing IGF increased from 41 in FY 2011 to 76 in FY 2012 and to 97 in FY 2013. To date, a total of 214 FBOs (out of the 497 project partner FBOs) have benefited from the plowing grants facility provided by the project. A cumulative area of 1,645 feddans for smallholders has been plowed as a result of this initiative.

During mid-2013, the project carried out an assessment of ox-plow training needs around Kajokeji County. This assessment was the result of a request by the farmers in this county, thanks to the inadequate number of four-wheeled tractors in the area. Upon the conclusion of this assessment, it was observed that the demand for ox traction services was high. Six FBOs with high demand for the training were identified, including Pekido/Nyaret, Morokosan, and Morjita in Lire Payam; Totonapai; Ngarakita; and Batakindi Mugun in Kangapo II Payam. Each FBO identified possessed a pair of oxen

ready for training. These FBOs were selected from a list of groups that had not benefited from the project's facility in previous years.

Key objectives

1. Have trainees understand the importance and benefit of ox traction
2. Ensure that trainees develop an interest in, adapt, and use oxen for cultivation to increase their acreage leading to increased productivity
3. Give trainees the know-how to use and maintain the ox-traction technique
4. Get trainees to train more farmers on the use of ox traction
5. Make sure that trainees/farmers care for their oxen (i.e. water, feed, and treat the oxen)

C. Two-Wheeled Tractor Use

Following a two-heel tractor use assessment, which was conducted in FY 2012, the project recommended conducting practical training in the three Equatoria states on operation and simple maintenance of walk-behind tractors, which were distributed as a pilot scheme back in FY 2012.

Refresher training was organized and conducted by BNN, a company based in Uganda, between June 14 and July 22, 2013. During this training, the 12 FBOs who received the tractors were trained. The training took place in different locations within the FARM intervention areas. The only FBO that did not receive the training was Elochang ILO in Imurok, because it was not accessible at that time. Instead farmers at the Obbo Model Farm were trained. This group had received a two-wheeled tractor but the machine was not one of the machines purchased from BNN.

As a result of this activity, 12 FBOs have been trained and 12 tractors have been serviced and maintained. Table 21 below shows all FBO locations and the number of trainees. The curriculum included checking and changing oil, changing and engaging gears, operating the machine, simple servicing, attaching equipment onto the tractor, appropriate practical plowing and harrowing, time to plow and harrow, depth of plowing, hours of plowing per day, fuel consumption, and other uses of the machines. There were two trainers, 78 person-days used, and 88 people trained in 11 locations from the 12 FBOs. During the training, a total of 10.25 feddans was plowed.

Table 20: FBOs and Number of Persons Trained by Location

State	Location	FBO	Planned No. Farmers Trained	No. Farmers Trained	No. FARM Staff Trained	Tractors Serviced	Tractor Status
Eastern Equatoria State	Isohe	Woroworo Lorith	6	6	1	1	Working order
	Ikotos	K-Longole	6	5	0	1	Working order
	Obbo	Obbo-Miikomi	7	8	1	1	Working order
	Obbo	Obbo Model Farm	0	6	0	1	Needs attention
	Imurok	Elochang Ilo	6	0	0	1	Needs attention

Western Equatoria State	Mundri	Garambela	6	7	1	1	Working order
	Mundri	Kati	6	4	1	1	Working order
	Mundri	Medewu	6	5	0	1	Working order
	Mundri	Troalo	6	10	1	1	Working order
	Maridi	Mudubai 1	6	5	1	1	Working order
	Yambio	Navundio	6	6	4	1	Needs attention
Central Equatoria State	Yei	Beacon of Hope	6	6	3	1	Working order
	Kajokeji	Kudaji Model Farm	6	5	2	1	Working order
Totals			**73**	**73**	**15**	**13**	

D. Use of Post-Harvest Equipment

The project secured the services of China Machinery technicians to come to South Sudan from Kampala to train the cooperative members in the use of maize shellers, groundnut shellers, sorghum threshers, cassava graters, and cassava chippers, which the project had procured as income-generating activities for the cooperatives and for two progressive farmers in Yambio. The training was conducted in all of the sites of the cooperative unions except Magwi, where there was a delay in formation of the union. The number of executive members of the cooperative unions who were trained is shown in Table 22 below.

Table 21: Training of Cooperative Union Executive Members in Post-Harvest Machinery

Name of Cooperative Union	Males Trained	Females Trained	Total
Yei Morobo	19	3	22
Kajokeji	6	2	8
Maridi	13	1	14
Mundri	10	4	14
Total	48	10	58

5.2.3. Cooperative Trainings

A. Development of Cooperatives and Associations

The FARM Project works with cooperatives, groups, and associations, collectively referred to as FBOs, for maximum impact. For FARM's work with these groups to be most productive, the project assessed and invested in developing the capacity of these groups' institutional/organizational and technical skills. The objective of the project's cooperative capacity building is to support FBOs and develop organizational leadership and management structures. This has included a range of activities:

- Registration
- Group formation and functioning
- Capabilities and procedures for internal management
- Group constitutions/bylaws
- Business plan preparation

- Bank accounts
- Elections

The aim is for these unions to form into legally registered primary farmer cooperatives, develop internal and external marketing channels to enhance the cooperative business and support cooperatives, and raise financial resources from within (internal saving and credit schemes) and/or from outside (bank loans). As the newly formed unions restructure, they are faced with many challenges, especially inadequate capacity to turn the nascent institutions into profit-making businesses. For this reason, the FARM Project is providing them with institutional capacity building assistance. To date, the project has facilitated cooperative unions in Maridi and Mundri Counties in WES; Kajokeji, Yei, and Morobo Counties in CES; and Magwi County in EES.

B. Cooperative Capacity Building/Marketing Plan Development

In the initial stages of formation of cooperative unions, the project focused on organizational development. Early on it became clear that more skills training was required in business plan development. Although 50 percent of the members of the cooperative societies paid shares and registration fees, there was no clear investment plan, due to lack of knowledge about how to develop business plans to guide the union on investment opportunities. With the distribution of value addition equipment, it is paramount that each cooperative union develop a plan to guide its operation.

5.2.4. Staff Development

Specialist trainings conducted primarily for project staff included training on the smartphones being provided to extension agents to use for data collection. A training needs assessment identified knowledge gaps that can be addressed by training extension staff. In addition, a gender analysis training was conducted to understand how the project addresses gender in its work.

A. Gender Analysis Training

The FARM Project hired a consultant to conduct a gender analysis in the months of September and October 2013. The gender consultant structured three separate but interlinked phases in the gender analysis. The first phase involved gender trainings, which were delivered to the FARM project staff and selected key stakeholders. Staff trainings took two days, while the consultative workshop took one day.

Objectives of staff trainings

- Create awareness and foster understanding on gender and its day-to-day application in selected agricultural value chains in South Sudan
- Impart skills necessary for FARM staff to actively engage in the project's gender analysis data collection process
- Develop FARM staff's analytical skills and competencies on gender for day-to-day application and use
- Gather gender-related data and information on the production and trade of selected agricultural value chains

Objectives of stakeholder consultative workshops

- Create awareness and foster understanding on gender and its importance in the development of selected agricultural value chains in South Sudan
- Gather gender-related data and information on the production and trade of selected agricultural value chains

B. Training Needs Assessment of Extension Staff

The FARM Project conducted a training needs assessment (TNA) in September 2013 to determine priority training activities for PEWs and to assess the effectiveness of the FARM extension approach. A consultant was hired to assess the effectiveness of the approach, identify needed staff competencies, assess training needs, and prepare an in-service training strategy.

The primary purposes of this assignment were to assess extension service needs in the project area and to evaluate the current capabilities of the FARM Project. Based on the findings of the TNA, a training program will be developed to increase the project's capacity to deliver improved extension services. The TNA looked at the competencies required by the extension staff targeted for the training. These required competencies are based on overall project goals and on the job descriptions for the extension staff, as well as on the needs of FBOs, farmers, and local government counterparts. Training is proposed to be conducted in January 2014.

One challenge for the TNA is that project and PEW cohorts have diverse backgrounds and skill bases. The project will need to ensure that there is both a standardized skill set and basic skills in communication, marketing, and production. The practical training will provide skills that will allow the PEWs to be more effective, not only in interfacing with farmers but also in linking data from the field to the project headquarters in Juba.

The details of the TNA will be provided in the final report (to be finalized in the first quarter of FY2014), which will spell out the findings on the extension system, needed competencies among extension staff, extension content and technical areas required by extension staff, recommendations for improvement, a training strategy, a suggested format for training modules, and a follow-up action plan.

5.2.5. Individual Trainings Completed in FY 2013

In FY 2013, FARM trained a total of 5,711 people, compared to a target of 3,769. Table 23 below shows the geographic, gender, and organizational distribution of the trainees.

Table 22: Overall Numbers of People Trained, FY 2013

Training Description	Target			Actual		FBOs	RSS	Other
	Central Equatoria State	Eastern Equatoria State	Western Equatoria Sate	Male	Female			
County-Level Good Agronomic Practices	0	16	90	149	24	109	16	1
Payam-Level Good Agronomic Practices	0	294	539	1,289	779	107	4	0
Cooperatives (Coops County-Level)	0	0	0	87	35	17	0	0

Training Description	Target			Actual		FBOs	RSS	Other
	Central Equatoria State	Eastern Equatoria State	Western Equatoria Sate	Male	Female			
Cooperatives (Coops Payam-Level)	0	0	0	503	404	0	0	0
Smartphone Technology	0	0	0	11	1	0	0	1
Farm Demos (Field Sites)	0	12	103	84	31	35	6	2
Seed Selection ToT	0	34	0	29	5	0	0	0
Seed Selection Payams	0	79	19	74	24	0	0	0
Cooperative Union Formation	3	36	19	14	5	3	3	0
Cooperatives Business Development/Management	0	0	78	103	11	61	13	3
Processing (Cassava)	329		43	218	154	18	15	2
Value Chain	0		0	38	12	0	0	0
Agricultural Trade Fair	0	9	0	7	2	0	3	6
Tours (Cooperatives Exposure to Uganda)	13	9	11	22	6	7	9	5
Tours (Farmer-to-Farmer Within State)	100	33	72	104	34	76	0	0
Post-Harvest Processing Equipment Training			60	49	8	0	3	3
Tractors (Refresher)	8	24	34	72	1	14	1	2
Sustainable Land Reclamation	0	20	0	16	4	4	0	0
Gender Analysis (Staff)	18	18	20	48	4	0	18	11
Gender Analysis (Stakeholders)	24	22	23	49	16	6	12	3
Farmer Field Days (County Demos)	225		222	124	106	11	0	0
Post-Harvest	1,110		0	490	465	53	0	0
Total	**1,830**	**606**	**1,333**	**3,580**	**2,131**	**521**	**103**	**39**

5.3. FARMER-BASED ORGANIZATION, COOPERATIVE, AND COOPERATIVE UNION FORMATION

The FARM Project continues to support the development of FBOs as the mechanism for organizing farmers into productive groups. The FBOs help the project reach community leaders, who are the focal point for training and for managing the distribution of inputs. FBO leaders tend to be male, although more women's' groups have formed and participated in the project. FBOs were initially formed as production units to increase the quantities of commodity available for markets. Their optimal size was thought to be between 20 and 25 members, since larger groups were unable to arrange the optimal use of labor and the smaller groups did not have enough labor to generate production surpluses.

FBOs were also not seen as big enough to attract traders. FBOs tended to be formed from clans and there was little trust between neighboring FBOs. For these reasons, the project has been working over the past year to develop cooperatives through amalgamation of FBOs. In six of the nine project counties, FARM has worked to form cooperatives into cooperative unions that allow FBOs interested in marketing their surpluses to come together. These groups have been exposed to several training

initiatives, not only to build their skills in production but also to increase their business knowledge. This work is ongoing, although it is impacted by the consolidation of organizational structures being developed in each county.

Annex C contains a full list of FBOs, cooperatives, and cooperative unions. Table 24 below shows the distribution by county of the farmer population and the FBOs, cooperatives, and cooperative unions.

Table 23: FBOs, Cooperatives, and Unions in the FARM Project's Areas of Operation

County	FBOs	Cooperatives	Unions	Farmers
Yambio	63	24	0	1,366
Maridi	54	16	1	923
Mundri West	58	5	1	1,065
Yei	54	15	1	1,132
Morobo	49	13	1	1,136
Kajokeji	53	14	1	1,269
Torit	66	3	0	1,633
Magwi	57	12	0	1,342
Ikwoto	43	3	0	964
Total	**497**	**105**	**5**	**10,830**

5.4. REGIONAL COOPERATIVE TOUR TO MBALE, UGANDA

The FARM Project organized an exposure visit for 35 selected model farmers, cooperative union management staff, government officials, and project staff. The delegates traveled to Mbale in Eastern Uganda to learn from the experiences and achievements of the Bugisu Cooperative Union (BCU), one of the largest and most successful unions in East Africa.

The FARM Project expected beneficiaries of this visit to learn how to manage their unions and increase processing and marketing of members' produce. The study tour was also designed to build government officials' capacity to support farmers in initiating sustainable agro-enterprises.

Specific learning objectives were to learn how to:

- Organize and manage a cooperative union
- Develop funding activities for a cooperative union, such as internal savings and credit schemes
- Develop investment projects for cooperative unions, including a practical tour of some successful agricultural projects of the union
- Market members' produce
- Manage a farm
- Improve post-harvest handling and processing of products for value-addition
- Use other new farming technologies.

The headquarters of the BCU is in Mbale Town. The union consists of 275 primary cooperative societies spread all over the region. With current working capital at USh 2.5 billion ($1 million), BCU is once again running profitably, after having collapsed countrywide in 2008 due to mismanagement and debts. With the help of the government, member farmers and elders voted out the old board, elected a new one, and paid off major creditors. By 2010, farmers who used to earn about USh 800 ($0.32) for a kilo of coffee started earning USh 6,200 ($2.50) per kilo. This price difference out-competed private buyers who paid only USh 2,500 per kilo before the arrival of the union to the coffee market.

The new board also helped the union recover properties that had been previously confiscated by creditors. BCU member-farmers currently enjoy services such as advantageous price interventions for crops like coffee and cotton. Other benefits include being able to export coffee under the union's mandate, access free cotton and coffee seeds, and receive immediate pay for their crops on delivery to the union. Members receive annual bonuses from sales made during the year. Each farmer made a commitment to introduce what they had learned from Bugisu into their own cooperative's practices. The greatest lesson learned was the need to cooperate with other farmers. The project hopes that this cooperation is carried forward into the aggregation phase of the cooperative unions being supported by FARM.

5.5. FARMER FIELD TOURS

During this reporting period, payam extension workers continued to provide technical assistance to FBOs. They visited the FBOs to follow up on the recommendations made during the trainings. The PEWs looked at each FBO's performance in adopting best agronomic practices, such as proper spacing, timely weeding, and seed rate per station, as well as in farm management in general. During these visits, PEWs also took selected farmers to other fields and demonstration plots to learn new ways of farming.

The FARM Project recently finished this activity in EES and CES, but it has just begun in WES. The main objective of the farmer field tours is to establish linkages between the farmers within the county, within the payam, and between counties and payams. This activity allows farmers to exchange experiences.

Involving farmers in the field tours exposes them to new technologies. They are able to identify their mistakes, learn lessons, and, as a result, carry home these experiences to help them improve their practices during the next agricultural season. The project selected farmers to participate in this activity who were:

- Willing to adopt new technologies (GAPs)
- Active members of a FARM-assisted FBO
- Beneficiaries of the FARM Project's grant program during this season
- Willing to make their farms accessible all the time for follow-up and advice
- Able to travel on their own from their FBO/home location to the meeting point, since the visits are done at the payam level

In planning for the farms to be visited during this exercise, the project chose:

- Innovative farmers eager to share information and experiences with other farmers in their localities

- Farmers or FBOs with accessible farms
- Members of FBOs
- Farmers who planted the seeds that were distributed by FARM
- Farmers able to demonstrate how to overcome constraints in increasing productivity

In addition, gender balance was made a priority. At least three female beneficiaries were selected for field visits in each payam.

5.6. AGRICULTURAL BEHAVIOR CHANGE

The project is promoting a range of techniques to train farmers and get information to them. The initial emphasis was on the training-of-trainer models described above. This has been supplemented with field visits and county demonstration plots, which have been led by extension officers who bring along participating farmers. In 2013, farmer-to-farmer field visits were undertaken so that farmers could learn from peers facing similar challenges. However, poor infrastructure and the state of the feeder roads have made dissemination of messages through training challenging in rural areas. Farmers have been able to get away from their farms or receive visits from agricultural extension officers only on an intermittent basis. As a result, the project has been trying to find other ways to disseminate messages to farmers, in addition to the trainings.

Radio coverage in South Sudan is fairly good. Surveys have shown that many people in rural areas have radios and that radio is the most effective way of reaching farmers. The project developed 28 public service announcements on agricultural best practices in English, local Arabic, and selected vernacular languages spoken in the Equatorial states. These radio spots were developed in FY 2011 and FY 2012 in close conjunction with MAFTARFCRD at the national and state level. They were broadcast on local radio stations in Western and Central Equatoria, in accordance with the agricultural calendar.

Progress was less quick in Eastern Equatoria. Agreements were signed for 2013 with the local privately owned radio station but the radio station had software inefficiencies that made it very difficult for the project to get copies of the announcements that had been broadcast. The project will continue with agricultural behavior change activities but recognizes that it will be difficult to broadcast in all the vernacular languages of Eastern Equatoria. Moving forward, the project will only use the messages in the languages of the catchment area of the FM radio station. FARM will contact other radio stations as they develop further coverage in the state.

6. CROSS-CUTTING ACTIVITIES

6.1. POLICY, LEGISLATION, AND REGULATORY FRAMEWORK

The FARM Project is designed to improve agricultural productivity, food security, rural markets, and the capacity of smallholder farmers and rural organizations. To accomplish this effectively, the project must help develop a conducive environment supported by a sound and effective policy framework.

During this reporting period, on behalf of MAFTARFCRD, the project printed 1,920 copies of the Agriculture Sector Policy Framework (ASPF) for distribution throughout the ten states of South Sudan. The documents were delivered to MAFTARFCRD in Juba in September 2013, following many discussions to ensure that the framework document complied with the ministry's wishes. The MAFTARFCRD liaison officer has been working with ministry staff to finalize the seven policies that had been written and approved through the Council of Ministers. Drafts of three policies still need to be reviewed by identified stakeholders before being finalized. Table 25 below outlines the status of all the policies. Appendix F contains a copy of the ASPF.

Table 24: Status Report of Various Policy Documents as of September 30, 2013

Serial No.	Policy Document	Accomplishments	Comments
1	Agriculture Sector Policy Framework (ASPF)	• Policy reviewed, edited, and finalized • Summary of ASPF generated. • Cabinet memo developed. • Economic cluster of cabinet reviewed and approved. • Council of Ministers approved. • Forwarded to National Assembly.	• Policy passed by parliament on 12/12/12. • Printing of policy to be completed. • 1,920 copies of policy framework submitted to MAFTARFCRD in September 2013. • Policy to be disseminated by MAFTARFCRD.
2	Forestry Policy	• Policy developed and reviewed by USAID technical team. • Document presented to ministry for further directions. • Policy presented to economic cluster and full Council of Ministers.	• Approved by full Council of Ministers on 2/8/13, with some amendments. • Awaiting presentation to National Assembly.
3	Agriculture Mechanization Policy	• Policy reviewed and edited. • Cabinet memo developed. • Passed to economic cluster of Council of Ministers.	• Approved by full Council of Ministers on 2/8/13. • Awaiting presentation to National Assembly.
4	Plant Protection Policy	• Policy reviewed, edited, and finalized. • Cabinet memo developed.	• Approved by full Council of Ministers on 2/15/13. • Awaiting presentation to

Serial No.	Policy Document	Accomplishments	Comments
		• Economic cluster of cabinet reviewed and passed to full Council of Ministers.	National Assembly.
5	Horticultural policy	• Policy reviewed and edited. • Cabinet memo developed. • Presented to economic cluster of Council of Ministers.	• Approved by full Council of Ministers on 3/15/13. • Awaiting presentation to National Assembly.
6	Soil Health and Conservation Policy (Fertilizer Policy)	• Policy reviewed and edited. • Cabinet memo developed. • Presented to economic cluster of Council of Ministers.	• Approved by full Council of Ministers on 3/15/13. • Awaiting presentation to National Assembly.
7	Training and Capacity Building Policy	• Policy reviewed and edited. • Cabinet memo developed. • Passed to economic cluster of Council of Ministers.	• Policy passed by economic cluster with amendments. • Awaiting amendment by MAFTARFCRD and re-submission to Council of Ministers.
8	Rural Development Policy	• Policy reviewed and edited. • Cabinet memo developed. • Forwarded to economic cluster. • Referred by economic cluster back to ministry for amendments.	• Policy being reviewed by team from Directorate of Rural Development and Directorate of Planning. • Awaiting comments from Under-Secretary.
9	Research Policy	• Policy developed • Document presented to directorate for further review	• Awaiting response from directorate.
10	Seed Policy	• Policy developed. • Document presented to directorate for further review.	• Awaiting response from directorate.
11	Rural Finance Policy	• Drafts presented by external consultant. • Ministry requested support to hold validation workshop for stakeholders.	• Stakeholders' consultative forum to be held in 2014.
12	Agricultural Marketing Policy	• Drafts presented by external consultant. • Ministry requested support to hold validation workshop for stakeholders.	• Stakeholders' consultative forum to be held in 2014.
13	Food Security Policy	• Drafts presented by external consultant. • Ministry requested support to hold validation workshop for stakeholders.	• Stakeholders' consultative forum to be held in 2014.

6.2. SYNERGIES WITH DONORS AND REPUBLIC OF SOUTH SUDAN PARTNERS

The development community in South Sudan is relatively large. There are many donors and implementing partners involved in livelihoods activities, which means there are both many actors to

coordinate with and a great number of opportunities for collaboration. In order to minimize the possibility of duplication, and to ensure greater impact, the FARM Project has actively engaged with partner organizations and forged strategic partnerships with agencies working in the same agro-ecological zone as the project.

6.2.1. Other USAID Projects

The project has worked closely with the Alliance for Green Revolution for Africa (AGRA) to support the seed companies promoted by the USAID-funded Seeds for Development (S4D) project. AGRA had provided grants to two seed companies in Central Equatoria to be developed into seed production enterprises. As a result of their support, the project held discussions with Century Seed Company and Greenbelt Seed Company, both supported by S4D, to promote contract seed production. Greenbelt Seed Company did not take the partnership further, instead using its own identified outgrowers to support production.

Century Seed Company agreed to form a partnership with farmers identified by the FARM Project, supplying them with foundation seed and monitoring crop production using a monitor provided by AGRA. One of the constraints expressed by Century Seed was the amount of money it could raise to pay farmers for the seed they produced in 2013; hence the farmers did not receive formal contracts with a fixed price for seed. For 2014, contracts still need to be finalized at the start of the season. In addition, the purchase price that the seed company will pay at the end of the growing season needs to be stipulated, subject to satisfactory performance from the farmers if this activity is to grow widely in South Sudan.

The project provided office accommodation support to IFDC until its USAID-funded program closed down at the end of July 2013. The assets that IFDC had acquired were transferred to the FARM inventory.

6.2.2. Other Nongovernmental Organizations

In February, the FARM Project hosted a high-level delegation of U.S. Government personnel, who came to visit the Balla Cooperative in Lasu Payam, Yei County. The program was organized by CARE International under its learning tour program. FARM worked closely with CARE to demonstrate the work the project is doing. The Commissioner for Agriculture in Yei County, Mr. Edmond Gogo, was invited. He thanked the U.S. representatives for funding the FARM Project, which he described as the best project in the county.

6.2.3. Other Donors and United Nations Agencies

The COP participated most months in the donor meetings held at the World Bank and JICA. The project has worked closely on the development of the CAMP, which is being developed with financial support from JICA. FARM has been discussing collaboration with the German Society for International Cooperation (GIZ), particularly in Morobo County, where both FARM and GIZ implement programs. For example, FARM participated in value addition training convened by GIZ. In particular, the project is looking at more closely coordinating on value chain activities. FARM has also held discussions about how to support smallholder farmers with the South Sudan Agribusiness Development Project that is funded by the Government of the Netherlands. Discussions are ongoing with both WFP and FAO to try and coordinate grain and seed purchases within the project's operational areas. At the invitation of WFP, the COP attended the annual meeting of the Purchase for Progress (P4P) initiative. The project hopes for more interaction with P4P in 2014 as the cooperatives start to aggregate surpluses.

6.2.4. Coordination with the Government of the Republic of South Sudan

The FARM Project has been active in the development of NEAT, in partnership with USAID, a team of consultants from McKinsey, and the national and state ministries of agriculture. Throughout the development of NEAT, the FARM Chief of Party held regular discussions with McKinsey consultants about activities that could be implemented in the Greenbelt. Six agro-ecological zones were identified and the first Zonal Effort for Agricultural Transformation (ZEAT) zone was the Greenbelt zone largely centered on the same geographic areas as FARM, although with the addition of Lainya County in CES and Mundri East, Ibba, and Nzara Counties in WES.

Through NEAT, the project had three identified deliverables. The first was the formation of cooperatives in WES beyond those already discussed in this report. The second was to expand the concept of block farms in Eastern Equatoria. During FY 2013, the project supported the expansion of five block farms in Magwe County of EES. They were established during the second half of FY 2013. The project also identified two senior members of the NEAT management team to be established within MAFTARFCRD to support ZEAT development in the other five zones. However before they could be deployed there was a reshuffle of the Government of South Sudan and their deployment has been delayed.

The protocol for project monitoring by the ministry changed in October 2012. A Director of Special Projects was appointed by MAFCRD (as the Ministry was titled at that time) to oversee projects for which MAFCRD is the counterpart. One planning meeting was convened by the Director of Special Projects in December 2012. Based on the meeting, a short presentation was made to senior management of the ministry. No further meetings were held in the reporting period.

The project has continued to develop weekly highlights and share them with ministry officials. The bulletins have highlighted the project's main activities.

6.3. GENDER

In September 2013, the project initiated a gender study in response to one of the findings of the mid-term evaluation. The work was completed in FY 2014, but some of the initial observations from the study are pertinent to the work that FARM is already implementing. The project is working in areas where cultural norms and beliefs influence agriculture-related work. These norms and beliefs are generally biased against women, who are considered inferior and subordinate to men. Husbands in monogamous marriages apply control over all farming activities, while the wife provides labor and support for farming work. Customary laws do not enable women to own matrimonial property, including land, if their husbands die.

Girls are not allocated any farmland in their families of origin, on the grounds that they will be married off. Widows are not allowed to make significant decisions about matrimonial and family property and assets; they must consult the deceased husband's male relatives before undertaking any major action, such as disposing of an asset. In CES and EES, married women are not allowed to undertake large-scale or full-time agriculture-related business or work. Such businesses are believed to contribute to women neglecting their reproductive roles and family-related duties.

Most men consulted by the project believed that women who are successful in business are likely to divorce or separate from marriage. It is widely believed that women stay in marriage only as long as their economic income is below that of their husbands. Successful women agricultural commodity traders are believed to desert marriage by looking for other men who match their increased financial status. Women who succeed in business are believed to be proud and lacking in respect for their

husbands. Husbands do not allow their wives to engage in full-time commodity trade. Their expectation is that their wives will take on household work and that they will not devote a lot of time to commercial agriculture. Contributing to this negative perception is a belief that married women trade at markets because their husbands fail to provide for the family.

Women and girls who take up market trading on a full-time basis were believed to be unable to be married. Most women who take up market trading seriously and on a full-time basis were believed to be widows or single, hence regarded negatively in WES.

Throughout the value chain, there are notable gender differences in access to resources and benefits accrued through different agriculture-related activities. Men, whether married or not, can access land as a result of the patrilineal family system and inherited negotiations with landlords in their communities. Men control all animals, including poultry, cattle, goats, and sheep. Men also control cash, fishing equipment, farm tools, axes, hoes, and bicycles. Men are responsible for clearing land. Women only control kitchen equipment and similar low-value storage items such as gourds and baskets. Women also control weeding and harvesting sickles, and women are responsible for weeding.

Men undertake pest management and crop protection activities such as construction of bird-scaring platforms. Men are not mandated to engage in crop harvesting in general but can participate if they desire. Harvesting of particular crops such as sorghum, millet, hard "simsim," or sweet potatoes by men in Pageri, Ifwotu, and Yire payams is forbidden. Men construct the granaries in EES but they do not undertake post-harvest activities such as shelling and winnowing.

To close the gender gap in agriculture, women would need to have control of resources, including some resources beyond those that men already control. Equipment designed to reduce women's strain and make their labor more productive would be helpful. Initial recommendations from the FARM Project gender study's analysis include strengthening women's organizations so that they have a voice and linkages with other established gender-aware organizations. The study also recommended that the project enlist support from men and address their needs, fears, and concerns in order to advance women. It is critical to engage men to address women's disadvantages in promotion or participation in the value chain.

The full gender report is not yet finalized. The ways in which the FARM Project plans to address the recommendations will be described when the report is final.

6.4. GRANTS

The grants component, with a budget of $5 million, continues to serve a very important role in supporting the FARM Project's three technical components. The project developed a grants infrastructure in its first two years. Grants have been allocated during the life of the project since 2011 in tranches of two phases per year. Phase 1 and 2 grants were provided for seed distributions for the first and second growing seasons of 2011. Phases 3 and 4 covered the two seasons of 2012 and phases 5 and 6 were for the two agricultural growing seasons of 2013. The FARM Project continues to develop grant opportunities for other types of agricultural inputs to be provided to FBOs in the agricultural sector. In 2013, such opportunities included plowing grants, grants for the establishment of block farms, and grants for post-harvest processing equipment. Where possible the FARM project provides in-kind grants. Since there are limited locations where farmers can access banking facilities to obtain cash, the in-kind grants take away the burden of having to find the money and then the commodity.

The FARM Project also continues to work with newly formed FBOs to help them register and meet eligibility requirements for grant consideration. The local organizations not fully registered by the time

of grant execution must be certified by local government offices as legitimate FBOs eligible to receive grants from the FARM Project. They must also commit to pursuing registration with the government.

6.4.1. Phase 5 and 6 Seed Grant Reviews

Various milestones are specified in the in-kind grant letters. They have to be achieved during the timeframe of the grant. For seed grants, certain activities are considered to be FBO deliverables during the life of the grant:

1. Land preparation
2 Seed distribution and planting
3 Yield monitoring and assessment (from planting to measurement of the yield itself)
4 Cost-share contribution

6.4.2. Phase 5 Grants

The FARM Project issued grants to FBOs for an in-kind seed supply of maize, groundnuts, local cassava stem, beans, millet, rice, and sesame. Activities 1 and 2 are being implemented during the reporting period. Yield measurements will become available after this reporting period. Yield assessments are only undertaken for maize since yield data for the other core crops (cassava and groundnuts in 2013) are very difficult to manage on farm harvesting. As part of yield measurement, yield assessment forms are being sent to FBOs to fill out, with the help of project staff. Arrangements are also currently being made to verify milestone 4 cost-share contributions which include the repayment by the farmer of 30 percent of the quantity of seed distributed, as outlined in the grant agreement.

6.4.3. Phase 6 Grants

The FARM Project issued grants to FBOs for an in-kind supply of local cassava TME14 stems, as well as for additional maize and groundnuts.

6.4.4. Plowing Grant Review

During FY 2013, 100 in-kind grants were executed. The FBOs receiving plowing grants received between 3 and 30 feddans of plowing support. The FBOs engaged the services of local tractors and ox-plows to plow land under these grants. The size of the grants ranged in value from $420 to $3,384. All grant recipients were to provide equivalent matches ranging from $105 to $846. The 100 grants issued were to provide financing to plow 825 feddans of land in the three Equatoria States. Of this amount, 739 feddans were actually plowed.

6.4.5. Goat Breeding Improvement Grant Review

The FARM Project closed out the three in-kind grants for the goat-breeding program in Western Equatoria State. The grants provided between 168 and 282 goats to each of three FBOs in WES, ranging in value from $18,920 to $29,735 per grant. A total of 624 goats were purchased through a competitive process from a vendor in Juba. A final evaluation of the three grants, completed in March 2013, was unable to provide reliable data on the production of offspring, with beneficiary reports of very high rates of mortality among the kids. The beneficiaries cited the absence of veterinary services and no clear implementation of the plan to transfer offspring to new households. FARM did not have a

comprehensive tracking system in place for this activity, particularly while the project was recruiting payam extension workers.

6.4.6. Walk-Behind Tractors Grant Review

The 11 in-kind grants for walk-behind tractors (total value $64,402) were closed out during this reporting period. The selected FBOs received a grant in the amount of $5,855 for a walk-behind tractor and accessory equipment valued at $5,610, with a cash payment of $245 for the initial supply of grease, oil, and fuel for start-up use of the tractor. The walk-behind tractor accessories included a double blade, double-blade plow disk, harrow unit, and small wagon. While some of the FBO recipients embraced the technology, and even trained other members of the FBO, others did not learn how to manage the machines properly. A follow-on to this training was undertaken in 2013 but, as stated previously, it seems that this technology is not appropriate at this time.

6.4.7. Post-Harvest Storage Grant Review

Twenty-four in-kind grants for post-harvest storage (total value $46,872) were closed out during this reporting period. The selected FBOs received grants for post-harvest storage equipment valued at $1,953. The equipment included improved traditional storage units, grainPro II units, grainPro drying units, and metal storage silos. At this time, the 24 grants are being evaluated, as the selected FBOs are using the units for yields from the first and second harvests of this year's agriculture season.

6.4.8. Post-Harvest Processing Equipment Grant Review

Six in-kind grants for processing equipment (total value $44,776) were distributed to FBOs during this reporting period. The selected FBOs received grants for post-harvest processing equipment valued from $400 to $1,230. The equipment included motorized cassava graters, manual cassava graters, motorized cassava chippers, manual cassava chippers, motorized maize shellers, manual maize shellers, motorized groundnut shellers, manual groundnut shellers, motorized sorghum threshers, manual sorghum threshers, and weighing scales. At this time, the six grants are being evaluated, as the selected FBOs are using the machines for yields from the first and second harvests of this year's agricultural season.

6.4.9. Block Farm Grant Review

In FY 2013, five in-kind grants for block farms were established through the grants program. The grants provided five groups of 50 people with access to 100 feddans per block farm in Eastern Equatoria State. The locations were identified by the State Ministry of Agriculture; the farmers were selected by the government. The five selected block farms received grants (total value $212,020) for plowing and seeds. The seed types included maize, simsim, and sorghum. At this time, the five block farms continue to be evaluated during the 2013 harvest season. If the evaluation results are positive, an additional five block farms grants will be awarded for the next agricultural season in all the Equatoria states.

6.5. MONITORING AND EVALUATION

Monitoring and evaluation (M&E) provides project management with objective evidence of progress towards achieving results. It enables project management to assess the quality and impact of work against what was planned and to communicate progress to field staff and implementing partners. It also enables a project to report on results achieved to USAID. In February 2013, FARM recruited a very experienced data analyst to head up the project information unit. This reinforcement of FARM's M&E effort has helped project reporting.

6.5.1. FARM Project's Information Unit

The strategic responsibility of the FARM Project's information unit is to manage information. The unit is responsible for the design, implementation, operation, and analytical assessment of all agriculture information programs and systems used by the project. This includes oversight of all monitoring and evaluation, database management, intervention assessment, and technical reporting work conducted by the project. The unit is also responsible for training data collection staff. The unit works closely with national, state, and local government counterpart staff to achieve project objectives and develop analytical capacities within these government entities.

Specific functions of the project information unit include the following:

- *Information program implementation.* The unit works with each of the three components of the FARM Project—production, markets and trade, and capacity building—to collect, analyze, store, and disseminate information on project activities. The information collection strategy is based on the seasonality of activities and the capacity of the project to collect reliable information. To expedite the delivery of information, the project is introducing technology such as smartphones that will enable PEWs to collect data in the field.

- *Information program operations and management.* The unit ensures that the daily and continual operation of information collection, storage, assessment, and report processes are efficient and effective.

- *Information assessment, analysis, and reporting*. The unit leads all analytical and assessment work related to collected data and develops an overall process for reporting to project staff, USAID, and government counterparts.

- *Staff training*. The unit trains and coordinates with staff and counterparts who provide much of the project's information collection capacity.

- *Database management.* The unit maintains and seeks to strengthen the database of strategic project information on:

    - Project indicators
    - Training and technical intervention results
    - Farmers' profile information
    - Agricultural activities information and data
    - Market price information
    - FBO information and data

- *Project reporting.* The unit assists project management in providing relevant material to complete periodic and performance reports to USAID and counterparts.

6.5.2. Achievements

Since the arrival of the FARM Project's Information Officer in February 2013, several assigned activities have been completed. These include the review of specific activities for the production, training (capacity building) markets and trade, cooperatives and monitoring and evaluation. The purpose of these reviews was to identify the data available in each component that could be used as monitoring and evaluation indicators for the project's development objectives.

One of the solid strengths of the FARM Project is capacity building. The information unit has strived to build close contacts with national organizations and institutions to ensure that relevant national partners are capable of making timely, evidence-based policy advice available to decision-makers and promoting public dialogue about policy decisions through dissemination and outreach activities. These capacity building activities build on the FAO's earlier efforts with the National Food Security Council under the Sudan Institutional Capacity Program—Food Security Information for Action (SIFSIA). SIFSIA had the responsibility of supporting the government in collecting, analyzing, and disseminating information on crop and livestock market prices; crop production and rangeland; nutrition; land cover and usage; and weather and its effect on crops. The other national institution with good potential for counterpart capacity development in data and information systems is the National Bureau of Statistics (NBS), which has branch offices in each state capital. Working with NBS will help ensure that some of the activities initiated by the FARM Project can be sustained.

The information unit also standardized the data and information collection templates from the 27 payams with regards to farmers' profile, agricultural activities, yield assessments, and market prices. The unit designed and implemented survey tools for maize flour mills and a rapid needs assessment for value chain equipment.

6.5.3. Yields

Major highlights of the reporting period included advanced work with FARM-supported FBOs on maize and cassava. A major activity was the introduction of a more advanced variety of the popular Longe maize seed, which has been distributed over the last few seasons to implementing partners under the grants program. Longe 10 was planted on trial plots throughout the project area. The resulting yields were the highest yet recorded for maize in the FARM area: 7,769 kg/ha in Maridi County, 3,712 kg/ha in Mundri County, and 5,505 kg/ha in Yambio County. These are very significant increases in yield over the baseline yields of only 800 kg/ha when FARM Project began in 2010. In addition to the results listed throughout the report, the tables below (Tables 26, 27, and 28) show results on specific PMP and work plan targets and indicators.

Table 25: Amount of Seeds Distributed (kg) and Area Planted (ha) 2013

State	Total Seed Distributed (kg)							
	Maize	**Groundnuts**	**Cassava**	**Beans**	**Millet**	**Rice**	**Sesame**	**Total (kg)**
Seed Rate /feddan	10	40	200	40	2	30	2	
Eastern Equatoria State	12,980	20,000	33,300	10,570	697	0	460	78,007
Central Equatoria State	23,935	41,760	69,200	34,790	0	405	0	170,000
Western Equatoria State	13,085	38,240	30,600	640	0	720	0	83,285
Total	**50,000**	**100,000**	**133,100**	**46,000**	**697**	**1,125**	**460**	**332,287**
State	**Total Area Planted (1 feddan = 0.42 ha)**							
	Maize	**Groundnuts**	**Cassava**	**Beans**	**Millet**	**Rice**	**Sesame**	**Total (ha)**
Rate (kg/ha)	24	95	476	95	5	71	5	
Eastern Equatoria State	545	210	70	111	146	0	97	1,179
Central Equatoria State	1,005	438	145	365	0	6	0	1,960
Western Equatoria State	550	402	64	7	0	10	0	1,032
Total	**2,100**	**1,050**	**279**	**483**	**146**	**16**	**97**	**4,171**

Source: The FARM Project Database

Table 26: Cumulative Amount of Seeds Distributed (kg) and Area Planted (ha)

Crop	Seed Distributed (kg)					Hectares Planted or Planned					
	2011	2012	2013	2014 Target	Total (2011–2014)	2011	2012	2013	2014 Target	Total (2011–2013)	Total (2011–2014)
Maize	60,000	64,695	50,000	40,000	174,695	2,520	2,717	2100	1,680	7,337	9,017
Sorghum	10,000	7620	0	0	17,620	2,100	1,600	0	0	3,700	3,700
Cassava	100,000	141,615	133,100	0	374,715	210	297	280	0	787	787
Beans	0	10,185	46,000	45,000	56,185	0	107	483	473	590	1,062
Groundnuts	25,000	98,880	100,000	100,000	223,880	263	1,038	1,050	1,050	2,351	3,401
Millet	0	0	696		696	0	0	146	0	146	146
Rice	0	0	1125		1125	0	0	16	0	16	16
Sesame	0	0	460		460	0	0	97	0	97	97
Totals: All Crops	**195,000**	**322,995**	**331,381**	**185,000**	**849,376**	**5,093**	**5,759**	**4,172**	**3,203**	**15,024**	**18,226**
Total: Per Farmer	**17.7**	**29.4**	**30.1**	**16.8**	**77.2**	**0.5**	**0.5**	**0.4**	**0.3**	**1.4**	**1.7**

Source: The FARM Project Database.

Table 28: Monitoring of Actual Results vs. Established Performance Indicator Targets FY 2013

PROGRAM COMPONENT 1: AGRICULTURAL PRODUCTIVITY								
Performance Indicators: Component 1	**Unit of Measurement, Disaggregation**	**Data Source**	**Baseline 2010**	**Oct. 2011–Sep. 2012 Target**	**Oct. 2011–Sep. 2012 Actual**	**Oct. 2012–Sep. 2013 Target**	**Oct. 2012–Sep. 2013 Actual**	**Oct. 2013–Sep. 2014 Target**
1.1 Increase adoption of improved technologies								
Number of farmers, processors, and others who have adopted new technologies or management practices as a result of USG assistance	Number	Farmer, processor, trader surveys	3,501	6,900	6,695	11,132	10,830	12,555
Hectares under improved technologies or management practices as a result of USG assistance (yield of commodities)	Hectares	Farmer surveys	4,556	8,694	5,838	7,589	4,171	3,203
Number of individuals that have received USG-supported short-term agricultural sector productivity training	Number, gender	Project record-keeping	849	3,960	3,171	3,963	5,711	3,191
Number of individuals (women) that have received USG-supported short-term agricultural sector productivity training	Gender	Project record-keeping	0	792	886	1,107	2,131	1,191

1.2 Improve producer organization business and management skills								
Number of producers' organizations, water users associations, trade and business associations, and community-based organizations receiving USG assistance	Number and type of organization	Project record-keeping	132	300	497	484	497	572
PROGRAM COMPONENT 2: AGRICULTURAL TRADE								
Performance Indicators: Component 2	**Unit of Measurement, Disaggregation**	**Data Source**	**Baseline 2010**	**Oct. 2011–Sep. 2012 Target**	**Oct. 2011–Sep. 2012 Actual**	**Oct. 2012–Sep. 2013 Target**	**Oct. 2012–Sep. 2013 Actual**	**Oct 2013-Sept 2014 Target**
2.1 Increase smallholders' access to market services								
Number of agriculture-related firms accessing critical agricultural services (such as credit, veterinary services, agricultural inputs, machinery, and business development) as a result of USG interventions/assistance	Number	Farmer, processor, trader surveys	0	20	48	25	34	42
Value ($) of purchases from smallholders of agricultural commodities targeted by USG assistance	($) USD	Project data from surveys	0	516,541	404,428	405,860[6]	682,015	800,000
2.2 Improve and maintain critical points on high-priority trade routes [This IR has been deleted from FARM TORs.]								
2.3 Increase private sector services (including micro-, small, and medium enterprises [MSMEs]) that support marketing and finance								
Value ($) of private sector services provided that support marketing and finance	($) USD	Service provider survey	0	50,000			0	TBD
2.4 Improve the legal, regulatory, and policy environment to facilitate marketing and trade								
Number of policies, regulations, administrative procedures drafted, analyzed, approved, and implemented as a result of USG assistance	Number	Policy specialist	0	5	3 finalized and approved, 5 drafted not yet approved by Govt. of SS	0	7	8

[6] Produce assessment conducted in Eastern Equatoria for 800 famers, plus smartphone data sales.

PROGRAM COMPONENT 3: CAPACITY BUILDING								
Performance Indicators: Component 3	**Unit of Measurement, Disaggregation**	**Data Source**	**Baseline 2010**	**Oct. 2011–Sep. 2012 Target**	**Oct. 2011–Sep. 2012 Actual**	**Oct. 2012–Sep. 2013 Target**	**Oct. 2012–Sep. 2013 Actual**	**Oct. 2013–Sep. 2014 Target**
3.1 Improve business, management, and service provision skills of private sector, including MSMEs								
Number of USG-supported training events held that are related to improving the trade and investment environment, and public sector capacity to provide quality services	Number	Project record-keeping	0	75	13[1]	15	15	27
Number of individuals who have received short-term agricultural enabling environment training	Number	Project record-keeping	0	1,500	300[2]	375	368	450
Number of MSMEs undergoing organization capacity/competency assessment and capacity strengthening as a result of USG assistance[1]	Number	Project record-keeping	0	20	1[3]	3	6	6
3.2 Improve capacity of public sector for development of enabling environment to support market-led agriculture								
Number of public sector agents sufficiently trained to be qualified to support market-led agriculture as a result of USG assistance	Number	Trainer records	0	165	179	200	103	150

Note[1] = The training events held related to improving the trade and investment environment; public sector capacity to provide quality services is for CES.

Note = This short-term training was on sustainable business relations, information-sharing, and transparency in the business environment.

Note[3] = The initial project expectation was that a group of businesses would be brought into the project as soon as possible to provide service support. The project soon found out that there were really no MSMEs in South Sudan. In collaboration with other partners, the project has worked with Century Seeds to build its capacity to develop a seed system for South Sudan and is identifying other potential service providers for future development.